

The Boston Medical and Surgical Journal

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Address.

ALCOHOLISM.*

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ALCOHOLISM has in all times involved the peace and prosperity of a large proportion of the human race. Ancient Egyptian inscriptions, Chinese manuscripts and the Old Testament note the use and abuse of wine and call attention to the evils of drunkenness. Its ravages have wrecked homes, brilliant intellects and empires. It has filled almshouses, hospitals and prisons; and misery has followed its wake. While it is true that the highest order of genius may exist among alcoholics, such genius is one-sided; the more common result is inefficiency, work half-done and the scrap heap for the habitué.

It is primarily a nervous disease, its effects on other organs being more or less secondary manifestations. All viscera are involved and the effects vary with the personal idiosyncrasy, the duration of the disease, and the amount taken. In one it may be the central nervous system, in another the kidneys or the liver which bear the brunt of its toxic action. In the beginning drinking may or may not be regarded as a vice, but at what period it becomes an unbreakable habit or disease only a wise man may say. The individual arrives at this point without knowing

* Annual oration before the Plymouth District Medical Society at Brockton, Mass., April 15, 1915.

it himself. With the continued use of alcohol there are certain developments and signs which definitely mark the drunkard. Many can drink in moderation without obvious harm, perhaps with no damage; but in some, as time goes on, changes take place modifying the mental and moral life, apparent to the nearest of kin, but unrecognized by the individual. Accompanying the mental and moral degeneracy visceral changes occur, and the kidneys, blood-vessels and liver become less efficient, rendering the drinker thereby even more susceptible to intellectual decay, and a poor subject to meet the crisis of pneumonia or any disease, requiring all that may be in reserve.

The brain is the physical organ presiding over the mind, and through its nerve connections controls the various functions of the body. Upon the integrity of the central nervous system depend all mental and physical phenomena, growth, nutrition, voluntary and involuntary movements, judgment, self-control, intellectual and moral characteristics. Physical or functional impairment of any part of this complicated system is manifested by more or less definite and characteristic evidence of disease. Motor and sensory areas have been charted so that it is possible to localize with a fair degree of accuracy the lesions producing physical dilapidation. The locations of intellectual, moral, judgment and self-control centers remain in the fog, although we are more or less familiar with their many manifestations. The integrity of such functions is necessary for a healthy mental life. The mind is dependent on a healthy condition of the brain, which, in turn, is to a

greater or less degree dependent on physical health. Intellectual and moral manifestations are directly influenced by any change from the normal equilibrium. Temporary impairment follows fatigue, injuries, toxic substances or changes in the circulation. Remove these causes, provided cell changes have not taken place, and the mind soon functions in its accustomed manner.

By tradition the laity and profession have long regarded alcohol as more or less of a cure-all, as well as a stimulant, but scientific research has demonstrated that its dominant influence is depressant and that its value as a drug has been far overrated. The effect of moderate and large doses is essentially one of degree, and varies in different individuals. In moderate or medicinal doses it has little effect on the pulse or blood pressure, but does change the distribution of the blood stream, as may be noted by the flushed face, due to dilation of the capillaries with a corresponding contraction of the vessels in the muscles and in the splanchnic region. It is probable that whatever good follows its use is due in large part to this change in the blood stream. Whether or not the immediate action of alcohol on the brain is a true stimulation or a depression of the inhibitory apparatus, the ultimate results leave little for debate. It is generally admitted, however, that mental vigor and energy are not increased and that the increased activity of thought is not due to a stimulation, but to a depression of the inhibitory apparatus.

Moderate doses produce a sense of well-being and exhilaration, with an increased flow of ideas and a loose tongue. With increased doses mental processes are benumbed, and the capacity for work is diminished, clear reasoning is impaired, and with increased amounts, judgment, self-control and the sense of responsibility are impaired and finally lost. Motor activity, and finally the power of speech disappear, drowsiness and coma complete the picture of alcoholic intoxication. Recovery, as a rule, takes place. Alcohol thus used over a sufficient period leads to more or less permanent impairment of the moral sense, powers of self-control and physical health; and with this damage continued debauches lead to that point where the drinker becomes little more than an irresponsible nuisance. A drunkard once made is held fast; the finer feelings and moral sense are blunted. He becomes mentally weak, excitable and quarrelsome, with a tendency to outbursts of rage and violence. In his sober moments he is indolent, neglectful of duty, and indifferent to his family and social relations.

Continued and excessive use invariably leads to intellectual and moral deterioration. Other drug habits play an insignificant rôle in the etiology of mental disease and mischief. In 1910 a commission appointed in Massachusetts to investigate the increase of criminals, mental defectives, epileptics and degenerates, states: "It is not possible to present reliable statistics on this point, but our investigations and the testimony

before the commissioner strongly emphasize the belief that there is an intimate relation between the abuse of alcohol and the amount of crime in society, and the number of epileptics and degenerates. Indeed, it is the belief of this commission, based on long personal observation, that the abuse of alcohol directly and indirectly, has done more to fill our prisons, insane hospitals, institutions for the feeble-minded, and almshouses, than all other causes combined."

The 1913 Report of the State Board of Insanity attributes alcohol as a causative factor of mental disease in 18.46% of all first admissions; and 11% of the cases first admitted to any hospital as some form of alcoholic insanity. Heredity appears as an etiological factor in 15.95% of the first admissions. At the Bridgewater Hospital during the same period, 20% of first admissions were diagnosed as some form of alcoholic insanity, and 40% of all others due in some measure to alcoholic intemperance. During the same period (1912-1913) out of a total of 4681 sentenced to the State Farm, 4136 were for drunkenness,—over 88%—and of the remaining crimes, it is safe to say that a majority, at least, were either directly or indirectly the result of intemperance. It has been estimated that 14.6% of the mental patients in the New York Hospitals are suffering from psychoses, the result to a greater or less degree, of alcoholism.

To what extent alcoholism in parents and grandparents is an etiological factor can only be surmised. Certain it is that far too frequently alcoholic excesses have existed in the ancestors, and that drunkards beget imbeciles, epileptics and criminals. Not only is it directly or indirectly an important etiological factor in the various forms of mental disease, but it is the direct and immediate cause of distinctive types of insanity known as the alcoholic psychoses, presenting certain characteristics more or less in common with numerous variations and manifestations, resembling to a greater or less degree the non-alcoholic insanities.

The causes of alcoholism may be sought not only in the social atmosphere, but also in the psycho-neurological make-up of the individual; environment and heredity underlie most drunkenness. It is perhaps impossible to say which is the more important. A craving for alcohol is not inherited, but the weak and unstable nervous system which renders the individual liable to excess in all things, renders him especially susceptible. Such an individual may be born into an alcoholic environment which favors the development of the habit in a soil previously prepared by his ancestors. Heredity manifests itself by demands for larger and larger doses, with impaired resistance to its action. It has been said that the drinker drinks because he is weak, and that he is weak because he drinks. As a result, he travels in a vicious circle, from which he has neither the ambition nor will power to extricate himself.

Overcrowding and bad housing produce in-

efficient people, and the saloons exist in proportion to the inefficiency of the community. The boy comes early in contact with those wise to the ways of the world. The saloon is the club-room of the neighborhood, whose members are easily admitted and to which there is no waiting list. Here, as in other walks of life, social drinking is the custom and the proper thing. The laboring man finds an ever ready welcome, a warm corner, and friends. He has no other place for social relaxation; presumably lacking education and training in self-control, he follows the drift of the current, and from the occasional social glass he becomes the steady drinker, and finally the drunkard, with the physical, intellectual and moral deterioration so characteristic. Such a boy or man does not deliberately make of himself an inebriate. An inebriate is not admired by him; rather he is looked upon with disgust. From the occasional drink, which may or may not be considered a vice, a habit is formed, which is satisfied only by increasing doses. Gradually and insidiously there is a breaking down of the moral character, powers of self-control and judgment, until a diseased condition is established, which may end here or finally terminate in a true psychosis.

The young, the ignorant, and weak-minded are not the only ones who succumb to this insidious poison. Its use exists in all classes, and the medical profession has furnished its share of wreckage. Disregarding the psychological questions involved, drinking is a social custom transmitted to us from a time unknown. The young man of the streets or the boy in college drinks because the crowd does. It adds to the pleasure of the moment, and is considered the mark of a man. Many go no further. Others lack sufficient strength of character, and with diminishing powers of resistance, assuming that the desire to abstain exists, go on to that point where they are unable to free themselves. Some have no desire to abstain and drink deliberately, either to forget their troubles or for the pleasure of the moment. It may be asked if such a state of mind is indicative of depravity or disease. If depravity, why? All drunkenness cannot be explained on a neurological basis, yet it is so intimately associated with a defective make-up that it is difficult to separate the purely vicious from the diseased.

The mental disturbances produced present every possible variation, from simple intoxication to profound dementia. The symptoms are frequently complicated by those of other mental diseases, rendering proper classification oftentimes difficult. Recognition is, however, of great importance, both to the individual and to the public. The alcoholic insanities are potentially dangerous, not only to the patients themselves, but to others, as they are frequently unrecognized or ignored until by some violent outbreak the peace of the community is disturbed.

Mental breakdown from alcohol is a gradual process, preceded by long and excessive drink-

ing, producing oftentimes an intangible deterioration before the definite onset of a true psychosis.

The psychoses especially dangerous are those characterized by active hallucinations and delusions. Cruel assaults and murder are a daily occurrence, and cause little comment, perhaps a word of pity for the wife or child, but no thought for their prevention. The majority of these attacks are probably the result of a drunken rage, while others are due primarily to an underlying mental disease, possibly complicated by a debauch, which is merely an incident in a pathological condition. It is impossible to consider all the manifestations of chronic alcoholism, consequently your attention is directed to a few of the more common types, exclusive of delirium tremens, seen in the hospital.

Acute alcoholic hallucinosis arising on a basis of chronic alcoholism is characterized by a sudden onset, with auditory, visual, tactile and olfactory illusions or hallucinations, accompanied by persecutory delusions and little clouding of consciousness. Recovery, with little or no intellectual damage, usually follows a first attack. Continued drinking, however, with further attacks, terminates as a rule in a chronic and permanent mental impairment, which remains more or less stationary when the patient is confined in an institution or otherwise deprived of alcohol.

Auditory hallucinations are most in evidence in this disease. The patient hears voices of friends, names, and mysterious telephone messages. He hears people talking over what is in his mind. He may hear the singing of angels or the voice of the devil; all very real, and no argument will convince him that he may by any possibility be mistaken. The voices are usually overheard and not addressed directly to the patient.

He thinks electric currents are applied, bad odors are detected, gases are pumped into the room at night, the food tastes suspiciously of poison or of some nauseous substance. Consciousness and orientation are usually clear. The patient appreciates his surroundings, and is able to see defects in others; general conduct is normal unless influenced by the delusions which are based on the hallucinations. The duration of the disease is variable. It may last for a few days or several weeks or months. Delirium tremens is closely allied, and must be differentiated, not only for the purpose of treatment, but also for legal reasons.

In delirium tremens, however, visual hallucinations predominate, all sorts of animals, reptiles and fantastic forms are seen moving about. Restlessness, tremor and fear accompany these frightful visions. The delusions are fugitive. Consciousness is clouded and there is disorientation; apprehension and attention are impaired and ideas are flighty. The duration is shorter and usually terminates by crisis. In well marked cases the diagnosis is not difficult, but, as in many other conditions, there are border line cases re-

quiring time for a diagnosis and proper classification.

There are two common types of chronic delusional states differing in mode of onset and clinical characteristics. In one there is usually a history of previous attacks of delirium tremens, or acute hallucinosis, in which there has been an apparent recovery, or the disease may represent the termination of an acute alcoholic hallucinosis. If preceded by an acute attack, the active hallucinations may have been in part corrected. The hallucinations of hearing develop again. The patients may complain that others are reading their thoughts, that voices are troubling them or electric currents are being applied. The delusions are fantastic and usually not elaborated, remaining the same from month to month. School knowledge, memory, orientation and consciousness are usually retained and the patients present a fairly normal appearance to the casual observer, although a thorough and careful examination will demonstrate a considerable degree of mental weakness. At first they may be irritable and impulsive, later becoming more pliable and humorous. They lack energy and initiative; as a rule the disease remains stationary under institution conditions, or when removed from alcohol. In time the delusions and hallucinations may subside, leaving the patient more or less demented and a burden for support by either the family or state. With continued drinking the disease is progressive and finally terminates in a deep dementia.

The other type, sometimes called alcoholic paranoia, is characterized by the gradual development of a paranoid condition in middle life in subjects who have been steady drinkers, without previous acute mental disturbance. They may or may not have been considered drunkards in the ordinary sense. In the beginning the diagnosis is difficult on account of the plausibility of the delusions which must be differentiated from the actual conditions and facts. They may state their troubles with emotion and with the appearance of truth. The disease is characterized by delusions of suspicion, persecution and jealousy, usually centering about the wife or husband. Aside from judgment defect, based on the delusions and general inefficiency of the drunkard, there may be little evidence of gross deterioration. Hallucinations are usually absent. Such patients misinterpret the most trivial acts as being evidence of marital infidelity. They may question the paternity of their children and accuse the wife of adultery. They may have delusions of poisoning. They neglect business and family. Although delusions regarding the mate are the rule, they develop erroneous ideas concerning others. They may attribute their trouble to jealousy or ill-feeling. The loss of a position, the result of their own incompetence and immorality, is considered the unfriendly act of the employer.

The subject of alcoholic paranoia may become

moody and revengeful, and if directly under the influence of alcohol, truly a menace.

The course of the disease is progressive, unless removed from alcohol, when the delusions remain more or less stationary and in time may subside. The return to the community and home is invariably followed by further drinking and a recurrence of the delusions. There are many such cases of moderate degree holding vague and visionary morbid ideas, going the rounds of the jails and work-houses. The majority are comparatively harmless, but they are of little economic value. The following cases, illustrative of the types seen in hospital practice, emphasize the fact that the drunkard is far too often suffering from an unrecognized disease rather than being merely a slave to a habit. Had these cases been recognized earlier, tragedies involving many might have been averted.

CASE 1. Male, age 47. Entered Bridgewater Hospital in March, 1913. Born in Ireland; came to America in 1882; common school education. No history of insanity in family. Father a hard drinker and sister and brother reported as intemperate. When a boy worked in a brewery with his father, who occasionally gave him beer, which he began to drink in moderation at 14 years of age. Claims to have refrained from drinking for two years after coming to this country. He worked in a cotton mill about a year and a half after landing. Since then has worked most of the time in clubs and hotels as waiter, bell-boy and kitchen helper. He has had many positions, many of which were lost on account of his habits. Has been arrested five times for drunkenness. He admits having hallucinations of hearing at three different times; the first in 1910 or 1911, when he heard voices speaking in a foreign language. He was unable to understand what was said, and thought that people were following him. While sitting by the Charles River he heard the voices, slashed his throat and jumped in, but the cold water brought him to his senses, when he swam about until rescued. He was treated at a general hospital. The voices disappeared in a few days. During the year 1912 drank to excess whiskey and beer. About two weeks before the commission of his crime, had been hearing foreign voices and thought people were after him. Christmas Day, 1912, while drinking with his sister and brother-in-law, words were passed which led up to the killing of his brother-in-law with a razor.

On admission to the hospital in March, 1913, the acute symptoms had largely cleared up. His attention was good and he told the history of his past life in detail. He said that his conscience did not trouble him and that he did not think God would make him suffer for the crime. "The reason is, Doctor, it was forced upon me, and I cannot remember anything about it. It seems that if God had intended me to suffer I would have had bad dreams and my conscience would trouble me." During the examination he was nervous and tremulous. There was a fine muscular tremor of the tongue, and twitching of the facial muscles. He realized that he had been sent to the hospital and that he had been insane. He no longer heard voices and he realized that they were hallucinations of hearing. However, he did not appreciate until later that a whistling sound in his ear at that time was also an

hallucination. On admission he had partial insight as to his condition, and realized that the trouble was caused by drink.

He had no recollection of the immediate details of the crime, although his memory was otherwise excellent. His memory concerning the details of the crime returned about six months later. At the present time he gives one the general impression of being damaged; is somewhat shaky and nervous, but presents no gross evidence of insanity. He is a good worker and takes rather more interest in current events than the average man in his station in life.

This is a case of chronic alcoholism or the disease 'inebriety' complicated by three attacks of acute alcoholic insanity. There are three periods during which he had hallucinations of hearing and delusions of persecutions based thereon. In one of these there is an attempted suicide, and in another a successful homicide. It is probable that under the routine of institutional life and removal from alcohol he will maintain a fair degree of mental health and that further deterioration will not take place.

CASE 2. Male, age 48. Sentenced to State Prison Feb. 25, 1905, for manslaughter. Committed to the Bridgewater Hospital April 17, 1905. The medical certificate states that when first admitted to the State Prison he was "dull and stupid," and later that he was "very depressed." He heard men talking about what he was thinking of; believed the other prisoners could hear him think; had headache and slept poorly, sometimes waking in the night covered with perspiration and his heart beating so that he could hardly breathe. Parents alcoholic, and he began to drink himself at 15 years of age. Arrested several times for drunkenness before present and last arrest. Admitted that he had been drinking to excess before committing the crime, but has little recollection of details. On admission to the hospital said: "I imagine that my thoughts are other people talking to me. They say things, I think, sometimes agreeable; other times not." Admitted having been troubled this way for about ten years, and also during a five-year period of abstinence; especially when he had any cause for worry. Attempted suicide several years before his crime. His memory was poor and he had little knowledge of current events. He was unable to tell when he was sent to State Prison. Felt badly over death of his wife, but did not greatly blame himself. For several years he had olfactory and auditory hallucinations, but at the present time, denies them. He now shows distinct signs of deterioration. His ideas and conversation are limited, attention is blunted, retention, insight and judgment poor. He is indifferent to his surroundings and to detention in the hospital. He is a good worker.

A case of chronic alcoholic insanity existing and unrecognized for ten years before the homicide. The fact that he was drinking at the time obscured the real condition, which was soon recognized by the prison officials. Under institutional routine and away from liquor he is likely to remain in his present condition indefinitely. If released he would, without doubt, return to his former habits and again become a source of danger.

CASE 3. Mill superintendent, age 62; born in England. Came to this country at twenty years of age. Admitted to the hospital January 19, 1912, charged with the crime, "Assault with a dangerous weapon." Father alcoholic. Patient began to drink at the age of 12, and has used liquor to excess for many years. Several times during his life suffered lapses of memory, discovering himself later in an adjacent town with no recollection of how he arrived there. He thinks that his present trouble followed testimony given by him in 1909, which he believes was displeasing to his employer, with whom he had been associated for twenty years, and that from this time his employer was unjustly prejudiced against him. Became suspicious; believed that he was being persecuted, and that his work was unjustly criticized. On account of his habits and inefficiency he lost his position in April, 1910; left shortly after for England, returning to this country in September. While in England and after his return he drank to excess and was treated for delirium tremens.

Between September, 1910, and March, 1911, he made several trips to the office of his employer for the purpose of obtaining a settlement. Claimed that \$50,000 was due him as a commission, in addition to his regular salary. He had no evidence to show that such was the case. On the contrary, his employer held his receipts for payments, covering twenty years. Patient claimed that he allowed this large sum to accumulate to his credit with no accounting, as he had absolute faith in his employer. In March, 1911, he purchased two revolvers in Boston, and carried them with him for the purpose of self-protection when he went to the offices of the mill to demand a settlement. During the controversy attempted to shoot his employer and one other. When arrested several unsigned checks for large amounts were found on him. He has persistently denied any recollection of the details of the assault, although his memory for events before and after is good. At the trial he was acquitted by reason of insanity, but through some technicality was released. A few days later he was re-arrested and committed to the hospital as a case of epileptic equivalent. He remained in the hospital over some two years, when he was taken out and brought to trial for the assault on the other party who was present in the office at the time of the attack. At this trial medical witnesses testified that he had recovered from the so-called epileptic equivalent, and no testimony was put in by the state to show that he was still insane. He was convicted, and sentenced to State Prison, in spite of this medical testimony and the fact that he had previously been acquitted by reason of insanity.

The essential points in the diagnosis are prolonged alcoholism, delusions of suspicion and persecution, the fear of bodily harm suggesting the purchase of two revolvers, indifference to his family and business affairs, a belief that a large sum of money was due him, and his superficial reason for allowing so large a sum to accumulate to his credit with no accounting. On admission to the hospital he talked pleasantly and intelligently on all subjects. He was correctly oriented, showed good judgment on general affairs, but poor judgment concerning affairs connected with his trouble. He had apparently maintained delusions concerning his former employer for two

years or more, and, without doubt, the delusions were aggravated by continued drinking. The debauch during which he committed the assault was merely an incident, but sufficient to classify him as a criminal rather than one suffering from mental disease. Thus far he has adapted himself to the routine of prison life and will probably continue as an orderly prisoner. It is possible that he will abstain when released, but a return to his former habits is to be expected.

The problem of drunkenness is far reaching, and its solution beset by tradition, social customs, business interests and indifference. It has too long been regarded from the policeman's point of view as an act punishable by arrest, fine and imprisonment.

It is unfair to classify all inebriates as criminals and to treat them accordingly; such methods are futile, illogical and tend only to arouse resentment and antagonism. Punitive measures have failed to diminish to any appreciable degree the plague of drunkenness. On the other hand, the medical profession has accomplished little from a curative point of view, and has little to offer, save a protest against such methods, the general attitude of mind regarding the inebriate, and the source of his production, social drinking. The inebriate, who under the influence of alcohol commits crime, places himself as a rule in the criminal class, unless there is an obvious degree of mental defect. Such defect may consist of a definite psychosis and go through the court unrecognized if it is shown that he was drunk at the time of committing a crime, but not shown that the debauch was simply an incident in a chronic disease of the nervous system. The law judges of responsibility from one point, whereas the physician, in contact with life from another angle, may have an entirely different view. Yet, within the medical profession through an honest difference of opinion, or lack of knowledge and a full appreciation of the significance of the signs and symptoms of the disease, the drinker, charged with crime or drunkenness, does not always receive the consideration which is his due. Society having made the drunkard, has no moral right to punish him, although it may confine him for therapeutic purposes or remove him as a menace from the community. It is obvious that for some institutional care is the only remedy. How long such custody should be maintained must be determined in each individual case, and even then we shall be disappointed with the results. Hope for the cure of the drunkard is remote unless there is a sincere desire on his part to be cured. It is useless to expect the poisoned alcoholic to act as a normal individual. We know that various changes occur in the viscera, blood vessels and brain, and that the degree of destruction varies in the individual and with the quantity taken. Possibly the damage is purely functional, but even then it is no less disastrous so far as results are concerned. The promises, remorse and apparent sincerity of one recovering from a debauch, will

deceive even those who have had the most experience. All sorts of excuses are made except the real one, which is the diseased nervous system and its unrecognized demand for alcohol.

The drunkard even deceives himself, but that his declarations and promises for the future are merely empty phrases is only proved by his subsequent conduct. He may go forth confident in his strength, but with a lurking desire or subconscious intention for a drink, which he feels so sure of handling, but which is surely his undoing. Whether or not the inebriates now living are cured is of little importance compared with the saving of future generations. Of those who early in life begin the moderate use of alcohol, none can foresee the degree of degradation which may follow. The habit is usually established at a time when youth is easily led, when it is considered more or less necessary to do as the others do, or perhaps go one better. It is during this period that one may have hopes for the future, for up to the present time the results of all known methods of treating inebriety are unsatisfactory and discouraging. We cannot say an individual has been cured unless he stays cured. An occasional cure does not prove any method. If prevention is the remedy, how shall we reach the boy in college or the young man in the shop? Can he be reached under existing social conditions, which license the manufacture and sale of intoxicating liquor? Abstinence has not, and will not exist when liquor is obtainable, and yet it is the only sure means known for the prevention of drunkenness.

Russia has autocritically pointed the way to national prohibition, and the recently enacted narcotic law of this country is a step in the same direction. If prohibition is expedient in a country at war, would not the efficiency of a country at peace be correspondingly increased? Although prohibition has not been an unqualified success, it has, however, diminished the amount of drinking in the so-called dry territory, and if enforced as vigorously as the Government pursues Kentucky moonshine, drunkenness would necessarily be checked. Public sentiment is wakening, and will in time be in a receptive mood for more active or radical temperance reform. If drunkenness is a disease, and prevention the remedy, it is a problem in preventive medicine and as such should receive the serious thought of the whole medical profession. The responsibility for the health of the people, and incidentally their prosperity, is ours, and thus far we have failed in performing our full duty in meeting it. It is not a question of reform from a sentimental, moral or religious standpoint, but a public health measure which we have looked upon with apathy and indifference. Temperance reform of the past has made little progress, for the reason that it has approached the subject from the wrong quarter. People do not like to be told what they should or should not do because of the expense or because someone be-

lieves a certain act to be a sin. They prefer to decide such matters for themselves. We should disregard the question of whether it is right or wrong, and present the subject as a health measure as vigorously as we have pursued the tubercle bacillus and escaping sewer gas. People should be taught by precept and example that moderate drinking undermines mental vigor and bodily strength; that chronic alcoholism is a disease and that a certain number of moderate drinkers will surely succumb.

Original Articles.

THE CEREBROSPINAL FLUID IN DIAGNOSIS AND IN TREATMENT.*

By W. H. WATTERS, M.D., BOSTON.

In preparing a paper upon the subject of the cerebrospinal fluid it has been the aim of the writer to give a general idea of the present status of our knowledge of the cerebrospinal fluid such as might appeal to the general practitioner rather than to present the more technical side in an attempt to interest the specialist alone.

That fluid of some kind existed in the cavities of the brain has probably been known since the time of Galen. Concerning its functions there has been a great amount of speculation. By some it has been considered to be the home of the animal spirits. By others it was thought to be a sort of a lubricant. For centuries, however, practically nothing was known about it and in fact even at the present day a great deal of our supposed knowledge is rather nebulous.

The first serious attempt to remove cerebrospinal fluid was probably made by a Dr. Corning, an American who in 1885 performed ventricular puncture and in 1889 made a lumbar puncture preceded by a laminectomy.

From the standpoint of actual investigation and extensive study Quincke may be justly called the originator of lumbar puncture as now widely performed. He in 1891 published an epochal paper upon the subject and by so doing opened up an entirely new field for investigation. So complete was his study that the technic employed by him is still followed by almost all workers.

Technic. It will certainly be unnecessary in this place to give in detail the method of performing lumbar puncture. Probably most of you have done it many times. In my personal experience, it has been found advantageous to use some local anesthetic, usually ethyl chloride, to deaden the pain of skin puncture. Occasionally in hyperesthetic individuals and in children

light ether or chloroform anesthesia is advantageous. A gold needle similar to those used for alcohol trigeminal injections has proven very satisfactory as it lasts longer than the ordinary ones, where rusting rather rapidly occurs. My former routine of lateral puncture has now been replaced by the median one. The latter is usually less difficult and less painful, particularly in intraspinal injections.

The reasons for doing lumbar puncture are varied, but almost all depend upon the attempt to clear up an otherwise uncertain diagnosis, or as a preliminary to the intraspinal introduction of some remedial substance. At times it is performed for therapeutic reasons in cases where increased intracranial pressure is suspected and its temporary relief is thought to be desirable. The principal contra-indication is posterior cerebral, or particularly cerebellar, tumor. Here the procedure must be most carefully followed and only a very small amount of fluid withdrawn.

Physiology. It may be well in passing to say a few words about the physiology of the cerebrospinal fluid. Until very recently much uncertainty has existed concerning the origin of the fluid, some authorities claiming it to be merely a transudate, while others considered it to be a true secretion. Probably the most satisfactory studies in this connection are reported in the September, 1914, number of the *Journal of Medical Research* by Cushing and Weed. It can now be quite definitely stated that the fluid is secreted by the choroid plexus, part going to the lateral ventricles and part to the subarachnoid space. Some may also come from the perivascular system. After secretion there is probably a more or less definite circulation toward the point of exit, which seems to be the arachnoid villi projecting into the dura, particularly near the sinuses and the dural vessels. The rapidity of the secretion apparently varies under different conditions of pressure. When the pressure is released by lumbar puncture and fluid is removed, it has been demonstrated to have been rapidly replaced in a very short time.

Physical Properties. Under normal conditions the fluid is perfectly clear, has a specific gravity of 1003-1010, and is slightly alkaline. Occasionally it is more or less pinkish in color, due to penetration by the aspirating needle of some small blood vessel. Such blood has no significance. Under certain pathologic conditions blood may actually be present in the fluid, either fresh, pinkish red, or altered, brownish red. Among causes for such may be mentioned intraventricular hemorrhage, hemorrhagic pachymeningitis, and various forms of local injury to the spinal cord from external violence.

Pressure. While divergent opinions exist concerning the value of pressure determination at the time of lumbar puncture, it seems wise to ascertain it always. This procedure is particularly desirable in watching for the danger signal in removing fluid prior to intraspinal

* Read at the February meeting of the Norfolk District Branch of the Massachusetts Medical Society. The work covered is based on studies made, largely, at the Evans' Department of Clinical Research and in the laboratories of Boston University.

injections and in ascertaining the amount of serum that can be safely introduced. In my personal experience, uniformly placing the patient on the side, in bed, and always using a water manometer, the average pressure is found to vary from 50 to 80 m.m. In pathological states it ranges from 30 to 300 m.m., or even higher. Meningitis and brain tumor are particularly liable to be accompanied by high pressure. Many cases of tabes also show this increase, while some do not. From personal observation the earlier and more active cases seem to have this higher pressure, while the more advanced or latent cases may be more nearly normal. Incidentally the former have manifested a more satisfactory degree of improvement after intraspinal salvarsanized serum than have the latter.

Examination of the cerebrospinal fluid can be divided into three sub-divisions, chemical, microscopic and serological.

Chemical. From the standpoint of diagnosis, determination of the presence and amount of protein is the most important procedure. This substance is present in the normal fluid in such minute amounts as to be unrecognized by the usual clinical tests, but is found by them when present in increased amount. Several such tests are now commonly used. That introduced by Nonne and Apelt consists of the mixture of equal parts of the spinal fluid and neutral saturated solution of ammonium sulphate. An opalescence or turbidity occurring within three minutes is said to indicate a globulin excess. The Ross-Jones method also uses ammonium sulphate, but by superposition as a ring test instead of a diffuse mixture. A popular method in this country has been devised by Noguchi. In this a 10% solution of butyric acid in saline is used as the indicator (add .5 c.c. butyric acid solution to 1 c.c. fluid, boil, add 1 c.c. normal sodium hydroxide and boil). Globulin in increased amount is indicated by a flocculent or granular precipitate. The most satisfactory test in my laboratory is that introduced by Lange, as it gives not only qualitative but quantitative results. It depends for its efficiency upon a solution of gold chloride prepared in a very careful manner, the various steps of which will not here be described. Various other tests have been devised, but are probably less satisfactory.

The clinical significance of proteid products in the cerebrospinal fluid is not such as to enable one to make a diagnosis from it alone. As a symptom or indication, added to others of a clinical nature, it is often decidedly valuable. In acute exudations with inflammation of the meninges, in hydrocephalus and in various forms of cerebrospinal syphilis, including tabes and paresis, globulin is usually increased. Its absence is often of greater significance in certain cases than is its presence in others. To illustrate: a case of tabes with globulin in excess comes for intraspinal or intravenous salvarsan treatment. Here a positive Wassermann may frequently be

changed into a negative one, but often without appreciable effect upon the globulin content. Under these conditions the prognosis is much less favorable than in others where the amount of globulin shows progressive decrease. In other words, the Wassermann reaction is at times more readily influenced than is the globulin, and unless the latter shows a corresponding degree of improvement the future outlook is less hopeful.

Apart from globulin, the spinal fluid is examined chemically for sugar, acetone and diacetic acid in diabetes, but such tests offer little from the diagnostic standpoint. Arsenic has at times been demonstrated in the fluid for a number of days subsequent to intravenous injection of salvarsan and neosalvarsan. Urotropin has also probably been demonstrated.

Microscopic Examination. This gives much more important results than does the chemical examination. Here attention is first directed to the cell count, then to the varieties of cells, and finally to any bacteria that may be present. The cell count should be made as soon as possible after the fluid is withdrawn. The technic is similar to a reversed leucocyte count, as far as preparing the specimen is concerned. A "white" pipette is filled to the mark .5 with a staining fluid and then to the mark 11 with the fresh, thoroughly mixed cerebrospinal fluid. The ordinary Turck counter is then used, or better the Fuchs-Rosenthal modification. The cells, stained lightly, are then readily counted, and at the same time the varieties can be determined. The normal cell count varies between 2 and 10, probably averaging 5 to 8. For obvious reasons, if there is admixture of blood due to penetration of a vessel at the time of puncture the disks must not be counted. In fact, from the standpoint of cytology, blood disks are practically eliminated. Departing from normal, the cell count may go to fifty, one hundred or more in tabes or tuberculous meningitis, to thousands in some of the acute infectious forms of meningeal inflammation. A count, then, of more than ten cells per cubic millimeter may usually be regarded as a departure from normal and an indication that some cause for such a departure be sought for. Of first importance in such a search is the estimation of the several varieties of cells present. In the normal fluid the cells found are of the lymphocyte variety, either large or small, but under pathological conditions other varieties appear. Thus a lymphocytosis may suggest, as will later be seen, a tuberculous meningitis, a tabetic lesion, a brain tumor, etc. On the other hand, a polynucleosis is equally able to make one consider the presence of some acute inflammatory disturbance. Differentiation between the small and the large lymphocytes is of no diagnostic significance as far as our present knowledge goes. After much prolonged research, various workers have devised and described very elaborate classifications of the different cells sometimes found, but I can see no practical ad-

vantage over the simple differentiation above described.

As will be noted later, one of the most important features of cerebrospinal cytology is the progressive changes that are observed as various forms of treatment are instituted to remedy or cure the pathological condition present. Here we often have a prognostic element as well as a diagnostic one.

Having now made the cell count, both qualitative and quantitative, our attention is next directed to the possible bacterial content. It must be noted that while the bacteriological examination is here mentioned rather late in the course of the work, its actual performance must be the very first procedure, and one begun very promptly lest outside contamination occur. Emphasis is again placed upon the need of absolute sterility of all instruments, utensils and containers. Frequently an entirely adequate diagnosis can be made by taking the microscope and a little stain to the bedside. By this means the presence of the intra-cellular meningococcus can often be demonstrated and many valuable hours saved by immediately instituting the proper treatment. The pneumococcus is also often found with its characteristic halo, as may be the streptococcus, the staphylococcus, the influenza bacillus, etc. It is always well to make cultures upon various culture media in order to allow for further more detailed study. Detection of the bacillus tuberculosis presents a much more complicated problem. When the cell count is normal the search for the bacilli is usually less thorough and painstaking than when a pleocytosis is present, as the former somewhat contra-indicates tuberculosis, while the latter may strongly suggest it. Microscopic examination of such a suspected case consists of study of a carefully centrifuged and stained sediment. Sometimes the bacilli may be enmeshed by adding a few fibres of absorbent cotton to the centrifuge tube. Always few in number, a prolonged search is almost invariably necessary. It must be remembered that a vain search by no means excludes the possibility of the presence of the disease, but that guinea-pig inoculation and tuberculin test of the patient are then in order.

Cerebrospinal Serology. This subject at once opens up a topic to which there can scarcely be placed any limit, namely, the Wassermann reaction. I can imagine the looks and feelings of disapproval among this audience did I here take the opportunity of launching out upon a dissertation of the Wassermann reaction. Suffice it to say that I will spare you such an imposition. As this is one of the most important of the more recent tests and is often of vital importance in neurological investigation it cannot be passed without some notice however. In the first place the Wassermann reaction cannot be regarded as an absolutely specific test, because the antigen employed may have nothing whatever to do with syphilis or its products. A normal beef heart, a human heart or a guinea-pig heart seems to be

equally as efficient as a source of antigen as does the congenital fetal liver. Some of the more delicate antigens, particularly those to which cholesterol have been added, have in my hands proven even too delicate to be fully relied upon in diagnosis, but have been of much value in determining the time when it is safe to desist from treatment of the known positive case. In other words, the cholesterolin antigen is less reliable than the others in positive cases, but more dependable in negative ones. It is my custom, therefore, always to run through duplicate tests with both antigens prior to giving definite reports. By so doing it is believed that we make but comparatively few errors in the test. Errors there must be in any extensive series of cases, and it is at times a question on which side one may err. At such times the patient is always given the benefit of the doubt in the diagnosis of the disease, when it is a question of discontinuing treatment. The clinician who depends absolutely upon a single positive Wassermann without other corroborative symptoms or history is the victim of an unduly or unwisely enthusiastic pathologist, and will at times bitterly regret it. It is far from my intention to belittle the test, but nothing can do more harm than to give to it undue credence where not justified. Of course the more often a positive result is obtained in such cases the greater the probability of the presence of the disease.

The elaborate measures necessary in performing the test cannot be here considered, nor will any time be now devoted to its occurrence and significance in the blood serum. The older Wassermann system, with sheep's corpuscles and antishcep amboceptor is the one of choice in the laboratory at Boston University after considerable experimentation with others, particularly Noguchi's. Spinal fluid to be tested should be not more than two or three days old, and even during that time it should be kept cold and sterile. My custom is to place the major dependence upon the test where the amount of fluid used is twice the amount of blood serum used for the same system. A greater percentage of positives can be obtained by using increasingly larger amounts of fluid, but with, I believe, less dependable results.

Having thus briefly considered the various contents and attributes of the spinal fluid, it may be well to turn our attention to and study equally briefly those diseases in whose recognition examination of this fluid plays a part.

Epidemic Cerebrospinal Meningitis. This disease is now known to be caused by the meningococcus, or as it was earlier called, the diplococcus intracellularis meningitidis. It is characterized by an acute purulent exudation into the sub-arachnoid space and by considerably increased pressure. The cerebrospinal fluid appears as a turbid, at times almost milky, substance. Upon chemical examination it contains, as might be expected, a greatly increased amount of globulin, while the microscope shows a very high cell

count. These cells, the very great majority of which are polynuclears, contain a varying number of the biscuit-shaped diplococci that so closely simulate gonococci in appearance. Diagnosis in such a case is very easy. It is particularly interesting to note the progressive decrease in the cell count and the diminution in the number of bacteria that in favorable cases follows the administration of the specific treatment.

Acute Suppurative Meningitis. This form of the disease differs from the preceding principally by being caused by non-specific bacteria and by not being benefited by the specific treatment, antitoxin. In my experience the streptococcus has been the most frequent invader, with the pneumococcus a close second. Staphylococcus has been encountered less frequently. Typhoid bacilli, gonococci, diphtheria bacilli, I have not yet found. They are, however, occasionally present. Here, as in the meningococcus type, the fluid pressure is increased, the globulin is in excess, the cell count is high and the causative bacteria are found both by direct microscopic examination and by culture. In certain cases under personal observation, it has been most gratifying to note the rapid, even though temporary subsidence of symptoms following lumbar puncture and removal of a considerable amount of fluid. The removal of the excessive pressure has been followed by a rapid cessation of the pain and amelioration of the allied symptoms. A gradual return of the unfavorable condition due to gradual re-accumulation of fluid has been repeatedly successfully relieved by further punctures. By many repetitions of this method I have seen cases entirely recover that seemed to be otherwise entirely hopeless. When it is remembered that by so doing fresh supplies of fluid are secreted, bringing to the battleground new recruits in the form of increased amounts of antibodies from the blood, the logical reason for such a procedure may be understood. These antibodies are at best not abundant and it may not be impossible to hope for some new method of attacking the disease in the not distant future.

Tuberculous Meningitis. Different from the other varieties of meningitis, the fluid in the tuberculous form is clear, or at most but slightly opalescent, globulin as a rule is increased, and pleocytosis is usually found, but occasionally a normal cell count is encountered. The increased number of cells is composed largely of lymphocytes. When such an increased lymphocytosis is discovered in a child or young adult with symptoms of meningeal irritation the presence of tuberculosis is always suspected, entirely irrespective of the ability to demonstrate tubercle bacilli. The increased permeability of the meninges to nitrates in tuberculous meningitis may be of some value as a diagnostic factor, but of this I can say nothing from personal experience.

Cerebral Hemorrhage and Cerebral Thrombosis may or may not be of syphilitic origin. The Wassermann reaction will differentiate the two

conditions, once the anatomical diagnosis is made, but is of no assistance in gaining that diagnosis. Blood may or may not be present in the spinal fluid in hemorrhage, dependent upon whether the bleeding occurs near the ventricles or the subarachnoid space. In cases of suspected brain tumor, lumbar puncture should be performed with unusual care for fear of unduly disturbing the already altered intracranial pressure equilibrium. But small amounts of fluid should be withdrawn, and often less reaction ensues if the pressure is maintained by injecting an equal amount of saline. Pressure in these cases is very often increased, and at times pleocytosis is present. It is stated that in hydrocephalus beneficial clinical results can follow repeated punctures, reducing thereby the high pressure. Anterior poliomyelitis has been extensively studied in recent years, and an article by Peabody, Draper and Dochez of the Rockefeller Institute gives much information concerning the spinal fluid. They determined the presence of pleocytosis with low globulin content very early in the disease, this gradually changing to a low or normal cell count, with increasing globulin as the symptoms became more pronounced. The virus, when experimentally introduced into the blood, passes to the fluid in from three to five days, probably by way of the choroid plexus. The fluid in epilepsy shows nothing of definite diagnostic value.

Syphilis. That condition, for the detection and treatment of which by far the greatest number of lumbar punctures are now being performed, is syphilitic involvement of the nervous system. Now that tabes dorsalis or locomotor ataxia and general paresis have been proven to be definitely due to the *treponema pallidum*, these two diseases can be associated with cerebrospinal syphilis, and all three studied together.

Without any doubt the central nervous system often shares with the rest of the body in receiving numbers of the *treponema* at that time, midway between the primary and secondary stages, when there is a general diffusion of the infectious agents throughout the body. Cases have come to the attention of most of us, of the appearance of a clearly defined cerebrospinal syphilis from five to eight months after the initial lesion.* Incidentally it may here be noted that the increasing tendency of many physicians of refusing to dismiss as cured any case of syphilis without first demonstrating a perfectly normal spinal fluid is most commendable and deserves more general acceptance. Kaplan well suggests the idea that "the *treponema pallidum* permeates the entire system of a patient in the beginning of the disease, gradually settling in various tissues, which will later determine the type of luetic infection, as e.g. visceral, vascular, cutaneous, nervous, etc." If this is true the syphilologist

* Wile and Stokes estimate that about 60 per cent. of all secondary cases show some involvement of the central nervous system. They state that as a possible guide to prognosis and as an aid to diagnosis spinal puncture in cases of secondary syphilis can scarcely be overestimated.

gist can foretell with some precision those patients who, if left alone, will be liable to develop late cerebral manifestations. In other words, careful examination of the spinal fluid should be made in every case of syphilis treated in the primary or secondary stages, prior to discharging the patient as cured. This, of course, is in addition to repeated Wassermann tests of the blood. If such a procedure is instituted, and when evidence of the disease is there found, proper therapeutic measures are taken to remove it, the incidence of cerebrospinal syphilis, tabes and paresis will be very greatly diminished. We have another illustration of the old saying, "an ounce of prevention is worth a pound of cure." In this early stage the organisms are comparatively accessible and are much more amenable to treatment than when they later become deeply buried in relatively avascular tissues. The question now naturally arises, what are the serological indications of early syphilitic involvement of the central nervous system or of impending appearance of symptoms? In response it may be stated that a positive fluid Wassermann, a globulin excess, or a pleocytosis, either combined or singly should, when accompanied by a positive serum Wassermann or a luetic history, always render one suspicious of cranial involvement, even in absence of symptoms. When with these one finds the Argyll-Robertson pupil, a tardy or uncertain foot, unsteady station, an absent knee jerk, some speech disturbance, an uncertain memory, or any one of several other single symptoms, the indication for energetic treatment becomes still stronger. It is gratifying to note the prompt response in serology that usually follows the institution of such treatment. The cell count falls steadily from 100 to near normal limits, the globulin excess subsides and the intensity of the Wassermann progressively decreases and hopefully entirely disappears. Later serological tests should be made after lumbar puncture in order adequately to watch the progress of the patient. In such a case the subsequent appearance of tabes or paresis would seem to be highly improbable. Not only should the above procedure be followed in every case of syphilis that may be encountered in future, but it should be equally applicable to those cases that have been treated in the recent past and are now apparently cured. In such cases lumbar puncture would without doubt show some with distinctly positive serology, cases that are in all probability prospective subjects for future neurological trouble. I am aware that some will consider these opinions to be those of an enthusiast and not suitable for practical application. Doubtless they may never be universally applied, as for various reasons all syphilitic patients cannot be subject to such tests, yet I fully believe that the facts already gained by spinal fluid examinations and clinical experience, entirely bear them out. In a comparative sense it is easy to bring our remedial agents into contact with the syphilitic organisms when they are on

or within the meninges, freely accessible to the blood stream. Vastly more difficult or impossible is it to reach them, when after months or years they are found deep in the tissues with very poor blood supply. If serologic tests indicate the need of efficient therapy in early syphilitic meningeal irritation they equally well indicate it in the more pronounced clinical manifestations of the disease. These manifestations are varied, dependent upon the location of the infectious focus, and are all grouped under the general head of cerebrospinal syphilis. In the spinal fluid the constituents vary considerably, dependent upon the areas involved. The most constant abnormality noted is the excessive pleocytosis. The cell count is the highest found among all the syphilitic nervous diseases, it being seldom below 100 and often as high as 1000, or even more. Such a count, consisting as it does mostly of lymphocytes, is an indication of active meningeal irritation. Globulin is present in excess in the larger percentage of cases, while the fluid Wassermann may or may not be positive. The serum Wassermann is usually positive. Here again the great value of cerebrospinal fluid examination is found, not merely in assisting in diagnosis but in ascertaining the efficiency of the therapy employed and the period of time over which it should continue. I assume throughout this entire paper that it is now taken for granted that observation of clinical symptoms is never a sufficient indication of the efficiency of the treatment or the time when it may with safety be discontinued. Did time permit cases might be cited admirably illustrating this point. Up to this period, therefore, that of cerebrospinal syphilis is the time par excellence for a favorable prognosis under efficient therapy.

If we grant the assumption of some neurologists that the treponema now pass from the meninges to the cerebral tissue and then bury themselves deeply into that tissue, as indeed we know they do, we pass from the realm of the favorable to that of the unfavorable, from the hopeful to the unfavorable prognosis, from cerebrospinal syphilis to paresis. As we make this transition our cerebrospinal fluid also shows changes. As the meningeal irritation has largely subsided the high cell count is replaced by a low one; this is the most important alteration. Globulin continues to be found in excess, and both the serum and the fluid Wassermann are positive in a greater percentage of cases. In fact the serum Wassermann is practically always positive until a very late stage of the disease, when it occasionally disappears. The gold chloride test is supposed to be of particular value here, but not sufficient data have been accumulated to speak of it with certainty. Whatever treatment is instituted should be carefully followed by serologic study, the aim being particularly to render the strong positive Wassermann less active or negative. How much can be done by some of the later methods is still problematic.

It is safe to say, however, that the great desideratum is early diagnosis, in order to attack the organisms before they are fully entrenched.

Tabes Dorsalis. In this disease the fluid findings are notably variable, and as such seldom render possible a definite diagnosis apart from the clinical symptoms. The Wassermann reaction is probably as often negative as it is positive, although the serum Wassermann is usually positive. Globulin may or may not be present in excess. The most frequent and important departure from normal consists in an increased cell count. This varies from 15 to 100, seldom going higher. The cause of the varied findings is probably found in the stage of the disease manifested by the patient at the time of the puncture and in the activity of the infection.

Assuming this to be correct, then fluid examination becomes of much importance as a means of ascertaining the stage of the disease and of giving a prognosis. It also offers a very valuable guide to the advisability of instituting active treatment. It seems safe to say that a fluid showing pleocytosis, globulin excess and a positive Wassermann is indicative of more hope from active treatment than is one where the findings are practically all normal. The reason is that the former is a more recent or more active infection, while the latter represents a comparatively pure degenerative process. Did time and scope of this paper permit, a discussion of the more recent forms of therapy in tabes might be of much interest, particularly the salvarsanized serum, mercurialized serum, etc. Such is at present inappropriate. Selection of suitable patients for such, can only be made by serologic as well as by clinical study, and it is impossible adequately to follow up the results of such without further laboratory studies of the aspirated fluid. Allow me to illustrate. A case of tabes comes to the hospital. In his serology there is but little or no departure from normal. He will usually show posterior spinal sclerosis and an inactive stage of the disease. He is sent home with an unfavorable prognosis, possibly after one salvarsan injection for provocative purposes. It is not fair to expect any treatment to replace tissue actually destroyed and functionless. Another case comes with a cell count of 75, a globulin in excess, a positive Wassermann in both fluid and serum. Here we believe there exists more or less active process in the meninges and offer to the patient more or less hope from treatment. This hope must lie, not in replacing already destroyed tissues, but in arresting the progress of destruction and in allowing the subsidence of the meningeal exudative processes. It is thus often possible to remove the lightning pains, to bring back to normal the areas of hyperesthesia, to eliminate the girdle pains, and to remove many of the symptoms of the disease, even including some cases of ataxia. If, during this treatment, the most efficient form of which is the intraspinal salvarsanized serum, the serology shows progressive improvement, including a

negative Wassermann, a favorable prognosis seems justified. If, on the contrary, the Wassermann continues positive, or becomes even more strongly so, possibility of a tabo-paresis should be considered with a resultant unfavorable future.

CONCLUSIONS.

In concluding this paper certain things may be briefly summarized as follows:—

Lumbar puncture is a relatively simple and safe procedure when properly performed. Examination of the fluid removed should include chemical, microscopical and serological tests. By examination of the fluid it is possible usually to recognize with certainty and to differentiate the various forms of infectious meningitis. Repeated lumbar puncture is not infrequently of definite therapeutic value in such cases. The cerebrospinal fluid should be carefully studied prior to discharging as cured any case of syphilis, irrespective of the stage in which it has been treated. Examination of the fluid is an essential in properly following the treatment of cases of syphilitic involvement of the nervous system.

Clinical Department.

RESULTS OF THE TREATMENT OF PYORRHEA ALVEOLARIS AND ALLIED CONDITIONS WITH EMETINE HYDROCHLORIDE AT THE DANVERS STATE HOSPITAL—PRELIMINARY REPORT.*

By H. I. GOSLINE M.D.,

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THIS report is the culmination of treatment first started at the Danvers State Hospital in November, 1914, and pursued perhaps more systematically during February and March, 1915. There were 42 cases, grouped for convenience of description under the headings: spongy gums, 14; very spongy gums, 12; spongy gums and loose teeth, 16.

The treatment was the so-called full treatment and the local treatment. The full treatment consisted in the administration of emetine hydrochloride gr. 1-6 twice a day subcutaneously, and the application of the wine of ipecac to the gums twice a day for one week, followed by a second week's treatment in which the gums were swabbed with wine of ipecac and an injection of emetine hydrochloride in 1-3 gr. dose was administered once a day.

* Danvers State Hospital Contribution, No. 55. Read at the meeting of the New England Society of Psychiatry at Northampton State Hospital, March 30, 1915.

The results were grouped as showing marked improvement, moderate improvement, or slight improvement. The 14 cases with spongy gums were all treated locally. Eleven showed marked improvement, two moderate improvement, one slight improvement. (The last had great masses of tartar about the teeth, making thorough application impossible.)

Of the 12 cases with very spongy gums, eight were given full treatment, and four local treatment. Seven showed marked improvement, two moderate improvement, three slight improvement. Of the four cases with very spongy gums treated locally, two showed moderate improvement, and two showed slight improvement. Only one of the eight cases receiving full treatment failed to show well marked improvement. No obvious reason for this was discovered.

Sixteen cases with spongy gums and loose teeth, regarded clinically as true Riggs' disease, or pyorrhea alveolaris, were treated; 14 by the "full" method, two locally. Twelve showed marked improvement, four moderate improvement. Of the two treated locally in this group, one showed moderate improvement and one marked improvement. (The case which showed marked improvement had gums which were only slightly swollen to start with, and it is possible that here loose teeth were due to some other cause.) Three cases which received full treatment and showed only moderate improvement had especially marked sponginess of the gums plus loose teeth, the gums bleeding easily, and it being possible in one case to express pus from a small sinus over the root of the right upper canine.

I have used the terms "marked improvement," etc., because I wished to reserve the term "cure" for those cases in which the ameba had been demonstrated before treatment, had disappeared during treatment, and beside which "controls" had been run. Cure should express something more scientifically exact than was possible in this series.

By marked improvement I have designated those cases in which a return to the apparently normal hue and resiliency of the gums was evident. Moderate improvement has meant that there is still left some sponginess, or possibly a slight redness or readiness to bleed, but that improvement is apparent. Slight improvement is more of an impressionistic term and means that there has been little, if any, improvement.

Our results in a certain sense show controls in that, of the 12 cases of very spongy gums, those treated locally showed only moderate or slight improvement, while those treated with emetine in addition to the local treatment showed 87.5% (7/8) marked improvement. The group with loose teeth and spongy gums showed 78.6% (11/14) marked improvement, but in no case with loose teeth did the teeth become firmly set once more.

We are now engaged in examining the teeth of a large number of cases that appear clinically

as pyorrhea. In several cases the ameba has been demonstrated already. It is our aim to demonstrate the ameba or some of the other organisms claimed to be the cause of pyorrhea, and with this material at hand we may later be able to use the word "cure" in the scientifically exact sense.

Medical Progress.

REPORT OF PROGRESS IN PEDIATRICS.

A RÉSUMÉ OF THE RECENT LITERATURE OF DISEASES OF THE GENITO-URINARY TRACT IN CHILDREN.

By RICHARD M. SMITH, M.D., BOSTON,

AND

RICHARD S. EUSTIS, M.D., BOSTON.

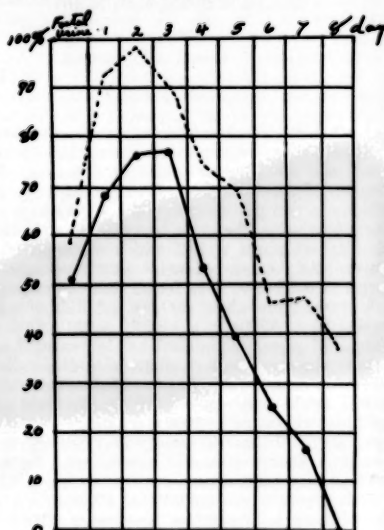
URINE IN INFANCY.

ENGEL¹ contrived an ingenious apparatus to determine the frequency of micturition in infancy and the amount voided at one time. It consists of a small vessel of 10 c.c. capacity in which are two platinum electrodes. As soon as the infant voids, the urine completes the electric circuit and rings a bell which summons the nurse. Any excess of urine overflows into a larger vessel below. He found that the average infant receiving about 800 c.c. of fluid a day voided 20 to 30 times a day, 10 to 20 c.c. at a time, and passed about 500 c.c. in twenty-four hours. The frequency of micturition diminished when the infant was asleep and increased when it was awake and restless. When the fluid intake is increased up to 1600 c.c. a day, the infant voids 60 to 70 times in twenty-four hours. The maximum amount passed at any one time during the first year is 60 c.c.

It is generally recognized that albuminuria in the newborn is of common occurrence. Heller² has been able to detect it at least once in each one of 31 normal infants. Franz and von Reuss³ also found it very common. In addition to the ordinary albumin there occurs a second substance known as the "acetic acid body," which causes a slight cloud on the addition of acetic acid to the urine in the cold. The most probable explanation for this is that the acetic acid sets free from their salts certain albumin precipitating substances (chondroitin-sulphuric acid, nucleic acid, bile acids, etc.), which then form insoluble compounds with the serum albumin already present in the urine. These albumin precipitating substances are apparently present in increased amounts during the first few days of life as well as in orthostatic albuminuria in older children. Thus this cloud on the addition of acetic acid is not only a measure

of the serum-albumin present, but also of the albumin precipitating substance. If there is an excess of the latter the addition of an albumin solution to the filtrate will bring down a further precipitate. Franz and von Reuss³ conclude that "the low grade albuminuria, as well as the excretion of albumin precipitating substances, discovered almost without exception, both of which the newborn show especially during the first three days, is a result of the act of labor; that is, of the change in the circulation which takes place in all cases during delivery. We have to do with a wholly physiological symptom which, to be sure, may be influenced by many accidental factors of physiological and pathological nature."

The frequency of albuminuria during the first few days of life is shown by the following table from Franz and von Reuss³:



— = albumin per cent. of cases.
 - - - = albumin precipitating substance.
 (Clouding of urine on addition of acetic acid + clouding of the filtrate of the acetic acid precipitate on addition of an albumin solution.)

They also tested for sugar in the urine of many of the infants, having in mind Hoeniger's statement that a true glycosuria occurs after forceps deliveries. In none did they find a surely positive reaction with Nylander's reagent, and the urine of the spontaneously born children was always sugar-free.

Differences in the urine of breast and of bottle fed infants have been studied by Ostrowski.⁴ Fifteen or 20 drops of a 2% silver nitrate solution are added to 5 c.c. of the urine. A white precipitate forms which, if the urine is from a breast fed infant, turns black after standing ten

minutes, or immediately on boiling. If the infant has been fed on the bottle the precipitate remains white. The cause of the reaction is still undetermined. It is probably the small amount of chloride in breast milk and consequently in the urine of the breast fed baby, which causes the silver nitrate to be present in excess. This excess is then acted upon by reducing substances in the urine and changed to metallic silver. Whatever the test depends on, it is apparently fairly reliable as Ostrowski obtained the following figures: 156 breast-fed babies, positive in 96.2%, negative in 3.8%; 30 bottle-fed babies, positive in 3.3%, negative in 96.7%; 78 babies fed on both breast and bottle, positive in 56.4%, negative in 43.6%.

ALIMENTARY ALBUMINURIA.

Hayashi⁵ has tested the nature of the albumin in the urine of 29 sick children and one sick infant, using the precipitin reaction with serums that had been sensitized to the proteins of beef, milk, egg white, and egg yolk. He found a positive reaction with the anti-milk serum in 5 cases, with the anti-egg white serum in 1 case, and with the anti-egg yolk serum in 3 cases; a total of 9 cases. These children, however, were all sick, although with different diseases, except that 2 of the 9 positive cases had pyelitis. Hayashi agrees with Hecker that "acute infections predispose to alimentary albuminuria," and concludes that "not infrequently in cases of albuminuria there can appear in the urine unchanged albumin from the food ingested."

ORTHOSTATIC ALBUMINURIA.

Nicholson⁶ has made an excellent study of orthostatic albuminuria as it occurred among 189 healthy English school boys. He reports that 7.5% showed albumin on arising, 7% after breakfast, 10.7% after football, and 18% after a three-mile run. "Each test seems to have picked out a fresh set of subjects who were influenced by the conditions of the test." Adding all together, 28% showed albumin at one time or another. Bugge,⁷ however, found orthostatic albuminuria in 14.9% of 1076 school children in Christiansa. It was much commoner among the girls than among the boys, the figures being 13.3% and 3.5% respectively. Nicholson⁶ was unable to discover any relation to the diet, to bathing, or to the height of the blood pressure. The administration of digitalis apparently increased the amount of albumin. The influence of position and of the muscular exertion of maintaining the body in equilibrium, he determined in an ingenious way. The boy was fastened flat in bed and then the head of the bed was very gradually raised, until after 1½ hours the boy had reached the vertical position. He was then released and allowed to sit quietly about the room. This was tried on two different boys. He found that "the mechanical raising of the body to the

vertical had a slight definite result; as it is quite certain that the albumin would not have appeared if the boys had stayed in bed in the ordinary way, we have a convincing proof that the mechanical raising of the body had a share in the albumin production." "In each case (after the boys were out of bed) the gentle movement necessitated by the maintenance of equilibrium, produced a large increase; after this the influence of the nervous system controlling equilibrium cannot be doubted."

Dietl⁸ believes that lordosis can cause sufficient stagnation in the renal vessels to induce albuminuria especially with the assistance of an unstable vasomotor system. Bass and Wessler⁹ have made a careful study of this theory and taken many blood pressure readings on children with orthostatic albuminuria. Unfortunately, "in spite of the apparent vasomotor insufficiency which many of these children showed, the blood pressure reactions both in the upright and recumbent positions and also after exercise, revealed no characteristic anomaly. Children with orthostatic albuminuria who showed marked cardiovascular symptoms could not be differentiated by means of blood pressure tests from the remainder of the group." They do not consider, however, that their findings have necessarily ruled out the hypothesis "that only those children react to lordosis by an excretion of albumin in whom an abnormal vasomotor system is unable to prevent congestion of the kidney," since their experiments were all made on the pressure in the brachial artery and the findings in the renal vessels of the same case might conceivably be different.

ORTHOSTATIC ALBUMINURIA AND TUBERCULOSIS.

It is claimed that orthostatic albuminuria is usually, if not always, a sign of tuberculous infection somewhere in the body. Reyher,¹⁰ investigated 20 cases of orthostatic albuminuria and was in every case able to find tuberculosis. It was necessary to keep the children under observation for some time and to supplement the customary history and physical examination with a temperature record, x-ray plates, and von Pirquet test. Wendenberg¹² holds similar views, although he does not consider it an invariable sign of tuberculosis. Arnold¹³ believes that orthostatic albuminuria is merely a sign of a general infection and is by no means pathognomonic of tuberculosis. He found no orthostatic albuminuria in 44 cases of chronic skin tuberculosis, nor in 8 of psoriasis, while in 33 cases of early and untreated syphilis it was about as common as in the early stages of tuberculosis. Therefore it is not to be regarded as suggestive of incipient tuberculosis unless syphilis can be excluded. Sturm¹⁴ criticizes Arnold's conclusions because the latter was dealing with chronic skin tuberculosis, which is a localized process and can scarcely be expected to give the same results as pulmonary tuberculosis. Although admitting

that orthostatic albuminuria may occur in syphilis and other infectious diseases, he nevertheless asserts that it "is a valuable early sign of tuberculosis." He found it present in 12 out of 20 cases of phthisis.

ENURESIS.

Enuresis may be defined as lack of bladder control after the third year. It is a symptom and not a disease and should lead to an examination for retarded mental development, local malformations, ulcer at the meatus, phimosis, vulvitis, renal or bladder stone, tuberculosis of the bladder, thread worms, or anal fissure.¹⁵ Bogert¹⁶ regards it as a functional nervous disorder dependent upon chronic digestive disturbances. He analyzed the histories of 50 cases and noted "practically without exception gross errors in feeding." Consequently he restricts his treatment to the regulation of the diet and the general hygiene, the only drugs used being laxatives and intestinal antiseptics. He gives no figures but says he has obtained "a fair percentage of cures."

Schwartz¹⁷ after a study of 246 cases, writes that "a review of the records does not bear out the assertion that chronic digestive disturbances are more frequent in cases of enuresis than in other patients. He also found "no connection between the tonsils and adenoids and the enuresis." "The degree of acidity of the urine bore no relationship to the severity of the incontinence," and although 70.9% of the specimens examined were acid, "the urine frequently varied in reaction on different visits" without any change in the symptoms. "Neither do the hemoglobin estimations point to anemia as an associated symptom." He found the following abnormalities of the genitalia: redundant prepuce, preputial adhesions, phimosis, hypertrophied clitoris; and the following under the head of the central nervous system: nervous, tic, chorea, imbecile, retarded mentality, indistinct speech, somnambulist, pavor nocturnus. He has nothing new to add to the treatment. In no instance did the customary hygienic and dietary measures effect a cure. The administration of atropine or thyroid was useless and alkalies seemed of doubtful value.

Simpson,¹⁸ on the other hand, in addition to regulating the general hygiene, uses drugs according to one of the following four methods:—

1. Urine normal. Tincture of belladonna, gr. x-xxv t.i.d.
2. Urine acid, full of urates, and of high specific gravity. Potassium citrate, gr. x, t.i.d., or enough to reduce the acidity, and then tincture of belladonna.
3. Urine alkaline, of low specific gravity and increased amount. All carbohydrate food must be prohibited. "If the urine is very alkaline acid sodium phosphate may be given; when the alkalinity has been reduced belladonna should be used. . . ."

4. Bacilluria, usually *B. coli*. Urotropin gr. v-x, t.i.d., often combined with potassium citrate.

If the treatment with belladonna fails he considers that ergot should be tried and also thyroid if the child is backward mentally.

Cahier¹⁸ has developed a method of treatment which he used first among the recruits in the French army where it met with such success that some of his colleagues adopted it. He quotes Gaulejac as having obtained 50% of cures in treating 150 children with enuresis according to his method. He injects 40 to 60 c.c. of normal saline into the subcutaneous tissue of the perineum on each side of the median raphe. A single treatment is usually sufficient. The injection is made forcibly so that considerable distention results, "the aim being to act on the nerve terminals of the region by pressure." In some way this stimulus reinforces the sensation of a distended bladder, so that the patient is waked out of a sound sleep by the desire to urinate.

NEPHRITIS.

Heubner¹⁹ found only 73 children with chronic kidney disease in a series of 17,000 cases. He makes no attempt to use the customary adult classification, but groups them as follows:—

1. Chronic hemorrhagic nephrosis—the commonest, consisting of almost $\frac{1}{2}$ the cases. It is characterized by edema and by bloody urine with albuminuria and casts. The duration is for years, with a tendency to grow worse.

2. Very similar to the first group, but without the hemorrhage. The course is more rapid, and death usually ensues after several months.

3. There was 1 case of a true contracted kidney.

4. There were 6 cases of pyelitis.

5. A group of mild nephroses following the acute infections. Frequently there are no symptoms, although the urine contains albumin and casts. It is serious only if after a second infection it passes over into one of the other types.

6. Practically a still milder form of the preceding group, ending in recovery.

Castro²⁰ adds to this classification a type which he labels erythrocyturia minima. It consists of the unexplained appearance of small numbers of red blood cells and leucocytes in the sediment of otherwise normal urine during an attack of one of the milder infections, or after vaccination, or the injection of tuberculin. He considers "that in addition to the factor of infection a constitutional predisposition must be hypothesized similar to that which is agreed on for orthostatic albuminuria."

Frank²¹ has studied the autopsy protocols of 452 infants, finding only 4.86% of acute nephritis. These were classed as follows:—

1. Exudative Type, predominantly hemorrhagic, purulent, with leucocytic infiltration and of lymphocytic character, 16 cases.

2. Interstitial Type, 4 cases.

3. Mixed Type, 2 cases.

The comparative frequency of the hemorrhagic type is of interest here. He considers it "due to the abnormally great permeability of the blood vessels in the first year of life."

Stavsky²² has reported 2 cases of Heubner's paedonephritis levis in which "no treatment or lack of treatment has modified conditions in the least." He urges that the children instead of being kept in bed should be allowed to lead a normal life, except that food which is liable to irritate the kidneys should be excluded from the diet.

Noeggerath and Zondek²³ have applied the modern tests of renal function to 6 children with nephritis and to several healthy controls. All the children were first put on a standard diet, which for a boy of 10, weighing 28.8K. consisted of 500 c.c. milk, 50 c.c. sugar, 50 gm. unsalted bread, 10 gm. unsalted butter, 100 gm. potatoes, 80 gm. carrots, 80 gm. apples, 250 c.c. tea, 100 c.c. coffee, 400 c.c. water, 15 c.c. lemon juice. This totals 1436 calories, 26.04 gm. albumin, 1.121 gm. salt, and 1061 c.c. water.

"The tests were made by superimposing on this standard ration varying amounts of salts, from 1 to 5 gm. a day, and varying amounts of a commercial food representing 67.4% albumin, 0.2% salt, and no extractives." The authors concluded "that the albumin content and the sediment of the urine are far from reliable criteria as to the functional capacity of a child's kidney. They may be apparently normal while the child is unable to tolerate the salt and albumin of the normal diet for his age. It sometimes happens that the tolerance for salt becomes upset when albumin beyond what he can tolerate is being taken, or vice versa."

In the treatment of the severe type of acute nephritis in children they made use of a diet exclusively of sugar, and later of drawn breast milk mixed with oatmeal gruel.

Reinike²⁴ reports that, by the use of polarized light lipid substances can sometimes be detected in the urine sediment. Their occurrence is an "indication of the destruction of epithelial kidney tissue." He found lipoids in 8 out of 100 cases, in 4 of these only one drop on a single occasion. Of the other 4 cases, 2 were without doubt a chronic degenerative nephrosis, and in the other 2 "it was the discovery of the lipoids which suggested the severity of the disease before the clinical course allowed an exact opinion." He never found lipoids in healthy children, or in acute nephritis or orthostatic albuminuria.

STONE.

Ollerenhaw²⁵ has reported 2 cases of renal calculus in children, one in a girl of three years, the other in a boy of eight years. In both the symptoms had begun at least a year before operation, although the kidneys had not yet become infected. The stones were single, as was shown

by x-ray, and were easily removed at operation. In neither case was there any recurrence. He believes that renal stones are probably commoner in children than has been suspected, and that they should be looked for most carefully in every case of hematuria or gravel or enuresis.

Collins,²⁶ on the basis of a review of the literature, concludes that "calculi discovered in older children or in adult life frequently originate in infancy or childhood." Apparently most cases in early life are found accidentally at autopsy, and "there is a paucity of case reports of renal stone in infants discovered and treated surgically." He adds one case to those already reported, that of a sixteen months' old boy with a stone impacted at the tip of the urethra. In addition he was able to demonstrate stones in both kidneys, but was not allowed to operate. He found that "diseases of an infectious nature occur in association with calculus and hydronephrosis in 65% or 107 cases" and that "diseases of the respiratory tract are associated with urinary stone or hydronephrosis most often." The treatment is clearly surgical as soon as the diagnosis is made.

UTERINE HEMORRHAGE OF THE NEWBORN.

This condition is not to be confused with precocious menstruation or with hemorrhagic disease of the newborn. It usually appears about the fifth to the seventh day after birth, too early for precocious menstruation, and never recurs. There is no bleeding from other parts of the body. The total amount of blood lost is very slight. In none of the reported cases have there been any of the secondary signs of sexual activity, such as engorgement of the breasts, growth of axillary or pubic hair, etc.

The condition is not a common one, the figures which Zacharias²⁷ has obtained from the literature and from his own investigations varying from 0.12% to 2.59% of female births. The bleeding appears on the fifth to seventh day, occasionally earlier or later, and lasts one to two days. It is not serious, being usually nothing more than a stain on the diaper, and requires no treatment.

The cause is so far uncertain. Juda²⁸ and Zacharias²⁷ both uphold Halban's theory, which is in brief that the internal secretion of the placenta which causes the enlargement and increased blood supply of the maternal uterus, may enter the fetal circulation and thus produce an analogous condition in the uterus of the child. The uteri of newborn infants show on histological examination all degrees of engorgement, even up to the point of hemorrhage into the uterine cavity. Zacharias adds, however, that in all his cases the infants were above the average weight and suggests that the additional compression to which they were subjected during delivery may have produced an increased liability to genital hemorrhage.

PYELITIS.

Thomson²⁹ discusses the mode of infection in an excellent paper based on 71 cases of colon infection of the urinary tract in his private practice. He believes that the bacilli may reach the kidneys by the blood stream, the lymphatics, or the urethra and ureters. "If the virulence of the organisms has been increased by morbid processes in the intestine or otherwise, or the normal resistance of the tissues lowered by local or general disease; or perhaps if there has been some retardation of the flow of urine, then more or less violent inflammation may be set up." In analyzing his cases he found that 79% were girls; that diarrhea at onset was commoner in infants than in children, and in boys than in girls; that under six months of age more boys than girls were affected; that rigors at onset are rare in boys and comparatively common in girls; and that the course of the disease is more severe in boys and more apt to terminate in a fatal pyelonephritis. He decided that "the great preponderance of female patients forces us to the conclusion that ascending infection by way of the urethra must be a common occurrence; and the excess of girls over boys probably represents the frequency with which urethral infection takes place. It seems very unlikely that colon bacilli can force their way up the lumen of the male urethra. The greater prevalence of antecedent diarrhea in boys would probably cease to exist if we were able to subtract from the list of girls the primary cases infected per urethram. The frequency of pyelonephritis in the male sex may be explained by the infection having usually in them passed straight from the bowel to the kidney and pelvis and not having ascended from below. The facts that rigors are so very rare in acute pyelitis in boys and in pyelonephritis in both sexes, while they are so common in acute pyelitis in girls (in whom we suspect an ascending infection) suggest the idea that the ureters may be the particular portion of the urinary tract from irritation of which a rigor most readily arises. The frequency with which rigors are met with in ureteral calculus may be held to support this view."

Somewhat similar views are held by Wyman,³⁰ who, from a study of 65 cases at the Children's Hospital in Boston, concludes that the ascending route is the common one in girls and the hematogenous in boys, while the transperietal is rare in both sexes.

Cannata and Caronia³¹ emphasize the necessity of preventing the early infections. They regard habitual constipation as dangerous because there is usually elimination of bacteria by way of the urinary apparatus. They, as well as Stiner,³² mention chilling as a common exciting cause.

Langstein³³ has reported a fatal case of pyelitis in which the infecting organism was Friedländer's bacillus.

Kowitz³⁴ reports a series of 40 cases consisting

of 17 males and 23 females. There was a marked seasonal variation, the disease being most common in September. He believes that pyelitis is a hematogenous infection following the digestive disturbances of the summer.

Freeman²⁸ endeavors to draw a line between a normal and a pathological number of pus cells in the urine. According to him "1-2 leucocytes in a D field (Zeiss) of precipitate (of centrifugalized urine) from a female baby does not indicate pyelitis. That number in a male baby, or more in a female baby, should render the diagnosis suspicious." F. H. Smith²⁸ finds that as few as 3 pus cells to the 1/6 field in either sex may cause the most severe symptoms.

A hemorrhagic type of pyelitis has been described by Langstein.²³ The sediment consists of "many red blood corpuscles, only scattered leucocytes, and perhaps here and there a cast. At the time it is difficult to decide whether this is the picture of a hemorrhagic nephritis, a calculus, or a beginning pyelitis."

The disease may last untreated for several years, showing either no symptoms or occasional exacerbations.^{29, 30, 31, 32, 33} With correct treatment at least 90% of the patients recover. The condition may lead to a contracted kidney or to a nephrosis.³³ "Before pronouncing the patient cured the urine should not only show an absence of organisms and of pus cells, but should also be culturally free."²⁸

Little new has been written about treatment. Alkalies are advocated by Thomson²⁹ and Marsh.³⁰ Wyman³⁰ favors changing the reaction of the urine back and forth by the alternate administration of potassium citrate and sodium benzoate. Freeman²⁷ admits that alkalies will control some cases, but considers them markedly less efficient than other methods of treatment. Langstein²³ regards the alkaline treatment as useless.

There is similar disagreement about the value of the "urinary antiseptics." The upholders of hexamethylenamine are Freeman,^{28, 27} Wyman³⁰ (as second choice), and Cannata.³¹ Langstein²³ prefers salol. Marsh,³⁰ Thomson,²⁹ and Kowitz²⁴ are skeptical as to the value of any urinary antiseptic.

Freeman²⁸ reports that vaccines will relieve symptoms but not cure the pyelitis. "The child loses its fever and will increase in weight and seem perfectly well, but when the urine is examined one finds the same pus and bacteria as before." The other authors are either skeptical as to the value of vaccines,^{30, 31, 32, 33, 34} or consider them useless.^{29, 33, 35}

VAGINITIS.

There have been a number of investigations,^{41, 42, 43, 44, 45} into the sources of infection in vaginitis, the general tendency of which, notwithstanding the great importance of hospital and institutional epidemics, is to place the ultimate responsibility further back, in the home,

the school, and the street or play-ground. In from 30 to 50% of the cases the infection has come from other members of the family, while hospital infection is given as only 3 to 30%. The remaining cases seem to acquire the disease from their playmates, either through indulgence in bad habits or innocently from infected toilets.

Prophylaxis is as much a social as a medical problem, but no board of health has as yet dared to undertake it. Goldwater⁴⁶ of New York has written an interesting report from the health officer's view point in which he offers no solution. Other authors,^{41, 42} have suggested various extreme and untried measures. All^{41, 42, 43, 44, 45, 47} agree in keeping the children out of school for a few weeks and in warning teachers and school nurses when they go back that they are not to use the common toilet.

The diagnosis in doubtful cases is greatly helped by the use of a urethroscope through which smears may be obtained from the vaginal vault and cervix.^{42, 48}

The most important part of the treatment is to keep the child in bed for the first few weeks and to use every means to improve her general condition. Opinions vary greatly as to the efficacy of local treatment. Kerley⁴⁹ and Hamilton⁴⁹ merely keep the patient clean and dry. Others^{42, 44, 47} follow a cleansing douche by the instillation of some silver preparation. Barnett⁴³ uses a permanganate douche and follows it three times a week by an endoscopic treatment of the cervix and vagina with Lugol's solution. Rubin and Leopold⁵⁰ consider the use of the electric lighted female urethroscope essential in treating the disease.

The advisability of using vaccines is still disputed. Hamilton⁴⁹ is "still enthusiastic in the treatment of recent cases by vaccines." Comby and Condat⁵¹ also speak favorably. Spaulding⁴⁴ has tried them out in 35 cases in addition to the local treatment and feels that they are possibly "an additional factor for good." Barnett,⁴³ Hamburger⁵² and Heyman and Moos,⁵³ however, consider vaccines useless.

Proof of the cure of the disease is difficult to obtain. Spaulding⁴⁴ believes that the disease may be latent for "as long as 18 months" and "that the most efficient treatment does not insure a permanent cure." Mattisohn⁵⁴ reports similar findings. G. G. Smith⁴⁷ has used the complement fixation test and finds it of considerable value for the purpose of establishing a cure. He writes that "if after three or more months, during which frequent smears from the depths of the vagina have contained no pus, and all other signs of the infection have disappeared, a discharge containing gonococci recurs, we believe that this attack is frequently a reinfection, very possibly from the same source as the first."

GNOCOCCUS INFECTION IN BOYS.

Two interesting cases of gonococcus infection in boys have been reported, one of urethritis in

a boy of 17 months,⁵⁵ and the other of arthritis in a boy of two and one-half years.⁵⁶ In the latter case gonococci were obtained in pure culture from the purulent joints and also from the urethra, which, however, showed no signs of disease even on careful examination.

TUBERCULOSIS.

Renal tuberculosis in children is a very rare disease. Oraison⁵⁷ reports three cases, all in girls, bringing the total number of reported cases up to 51. One of his patients had a severe Potts disease, was not operated on, and died; the other two had nephrectomies; one apparently recovered and the other was lost sight of. Roher and Ferron⁵⁸ report a case, also in a girl, in which the offending kidney was removed with resultant cure.

Primary genital tuberculosis is also rare. Lyons⁵⁹ reports three cases in small boys. In two of these the infection was in the epididymis and the patients appeared to be in perfect health. In the third the prostate and seminal vesicles were found infected and the boy presented a typical tuberculous appearance. Lyons concludes that in these cases tuberculosis of these organs is usually the only focus in the body and that therefore operation may produce a permanent cure.

Gräfe⁶⁰ in an analysis of necropsy protocols, found 19 cases of genital tuberculosis in girls under 15 years. The lesions of the genitalia were invariably secondary to tuberculosis elsewhere. The tubes were the favorite site of infection.

Holt⁶¹ has reported a case of milary tuberculosis following a ritual circumcision. He gives an abstract of the 40 cases already reported and says that of the 41 patients, 16 are known to have died, 7 are tuberculous, in 12 the final results are not known and only six are stated to have recovered.

Champtaloup⁶² reports a similar case from New Zealand, except that the operator was a physician who has since died of laryngeal tuberculosis. This patient was treated with tuberculin and when seen eight months later was the picture of health.

RHEUMATIC ORCHITIS.

Bass⁶³ describes a boy two and one-half years old who developed erythema nodosum and torticollis, and four days later, while under treatment with salicylates, a sudden swelling of the scrotum. The scrotum was hot, edematous and dusky in color, and the left testicle was enlarged and exquisitely tender while the right was normal. The condition quickly subsided and a month later there was "no atrophy of the testis."

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Reports of Societies.

THE BOSTON SURGICAL SOCIETY.

STATED MEETING (CLINICAL) HELD ON MONDAY, APRIL 5, 1915, AT THE MASSACHUSETTS GENERAL HOSPITAL.

GASTRIC CANCER.

DR. C. A. PORTER did a partial gastrectomy for gastric cancer.

CANCER OF CERVIX: OPERATION: PALLIATIVE LIGATION OF THE INTERNAL ILIAC ARTERIES AND CAUTERIZATION OF THE CERVIX.

DR. FARRAR COBB presented and operated upon this case.

McG., forty-six, white, widow. Symptoms: For two years irregular catamenia, occasionally profuse hemorrhage. For five months weakness and continuous foul vaginal discharge with constant pain low in the pelvis, dull, not severe.

Examination showed vagina filled with fungating, cauliflower-like ulcerated mass. Induration in both broad ligaments.

Operation April 5th. Median suprapubic incision. Disease well into the broad ligaments. Right internal iliac artery ligated with silk. On the left side dense adhesions between an old pus tube and the sigmoid flexure made ligation of the artery too dangerous. The abdominal wound closed without drainage. Patient placed in lithotomy position and cervix thoroughly cauterized.

(This patient made an uneventful convalescence, and had no further pain while in the hospital. No hemorrhage. Discharged from the hospital on April 19th.)

A CASE OF DUODENAL ULCER AND CHRONIC APPENDICITIS.

DR. CHARLES L. SCUDDER presented and operated upon a case with the above diagnosis and the appended history:

Two weeks ago the patient, a married woman of 25 years of age, entered the hospital complaining of stomach trouble. Her family history was negative. Her past history showed repeated attacks of tonsillitis. She had been troubled with constipation for four years.

For three years she had had attacks of epigastric pain from four to five times a day, lasting about twenty minutes each time. The pain was gnawing and burning in character and was relieved by lying down and by soda. The pain was severe enough to double her up. During the present attack she has vomited all solid food. About half an hour after meals she becomes nauseated and vomits. Three weeks ago she vomited a small amount of blood. The pain was inconstant during the first two years but has become pretty constant the past year. She has lost 50 pounds in weight in three years.

Physical examination was negative excepting for slight tenderness in the epigastrium. Peristalsis was visible.

Two x-ray examinations were made. The first showed adhesions obstructing the duodenum. The second was interpreted as probable duodenal ulcer and possibly adhesions. There was a question of stones in the gall-bladder.

The Wassermann examination of the blood was negative. The urine was negative. The blood tests of the stool were repeatedly negative. The hemoglobin was 80%.

The tube examination showed a fasting content of 60 c.c. of green, cloudy fluid. There was free HCl and the test for blood was positive. The test meal showed 105 c.c. of cloudy white material. Free HCl was .18% and the total acidity was .26%.

The history and the x-ray in this case are suggestive of duodenal ulcer, and the x-ray is also somewhat suggestive of gall-stones.

Exploration showed an induration just below the pyloric ring in the first portion of the duodenum posteriorly. No stippling was seen. There was no other pathology, both the stomach and gall-bladder appearing normal. The pyloric region of the ulcer was infolded and a posterior gastroenterostomy was done. Under a separate incision the appendix was found covered with a veil, thinned out and bound down by adhesions. An appendectomy was done.

Two weeks following the operation the patient was discharged from the hospital looking and feeling well. She had a good convalescence, with no complaints of any kind.

REMARKS.

I believe that given findings such as in the case before us; an uncomplicated duodenal ulcer, a posterior gastroenterostomy with infolding of the duodenal region temporarily and partly to obstruct the passage of food is sufficient treatment for the ordinary case of duodenal ulcer. I personally believe that all procedures for causing obstruction including section of the pylorus should be reserved for those cases which require a second operation. Until we are more informed about the cause of ulcer and the real influence which a gastroenterostomy has upon the healing of a duodenal ulcer, this seems to me the wisest attitude to take in the treatment of these cases.

The red stippling sign was absent in this case, probably because the lesion was posterior and was not near enough to the surface to be seen. I believe the red stippling sign is an important sign and as times goes on that it will aid the surgeon in distinguishing cancer from chronic ulcer.

CHOLECYSTECTOMY FOR CHOLELITHIASIS.

DR. LINCOLN DAVIS detailed the history of this case and performed the operation.

RENAL STONES: RENAL CYST: OPERATION.

DR. HUGH CABOT operated on this interesting case. He felt before operation and proved by operation that the shadows shown in the kidney region in the x-ray plate were not stones but calcified glands. The stones which were found at operation were not shown in the plate. In addition to the stones there was a cyst of the lower pole of the kidney as large as an English walnut. Dr. Cabot went into the differential diagnosis of the case very carefully, and he stated that preoperative diagnosis was probable hydronephrosis.

ABDOMINAL PAIN: EXPLORATORY LAPAROTOMY.

DR. HUGH WILLIAMS presented a case in which every effort had been made to establish a diagnosis of the cause of the pain in the upper abdomen. The probable diagnosis was cholelithiasis or cholecystitis. The exploratory operation was negative in its disclosures.

SARCOMA OF THE SCAPULA: INTERSCAPULO-THORACTIC AMPUTATION.

DR. FARRAR COBB presented the patient.

M. C., 48, white, married. Symptoms: For two months pain in left shoulder, limitation of motion in the left arm with the appearance of new growth. Shoulder girdle amputation was performed because of the large sarcoma occupying the region of the scapula and point of the shoulder. Previous to the operation the patient had indirect blood transfusion. Patient suffered no shock at the operation. The wound healed by first intention. Operation done March 11, patient discharged from the hospital March 30.

POPLITEAL ANEURYSM: LIGATION OF THE POPLITEAL ARTERY: GANGRENE OF THE FOOT.

DR. CHARLES A. PORTER presented this case. A Matas operation was impossible; hence ligation of the artery was done; a limited gangrene of the foot followed.

SYPHILIS AND CARCINOMA OF THE UPPER JAW.

DR. PORTER then exhibited a patient with a tumor of the upper jaw. An outline of the history was given and Dr. Porter asked for opinions as to the probable diagnosis and as to treatment. He said that a microscopic examination of tissue excised showed both syphilis and cancer.

ACTINOMYCOSIS OF ABDOMINAL WALL.

DR. PORTER showed a man with a slowly healing actinomycosis of the abdominal wall.

INOPERABLE SPINA BIFIDA.

DR. PORTER also presented an infant showing an apparently inoperable spina bifida.

CENTRAL GIANT CELL SARCOMA OF UPPER END OF ULNA.

DR. C. C. SIMMONS presented this case:—

The patient is a colored man forty years old. He has always been in fair health. Denies venereal. Five years ago he was in the Boston City Hospital for five weeks for pleurisy and the chest was tapped once. He has been working ever since.

Twenty-eight months ago he fell, striking on the right elbow. Following this he began to have pain in the elbow, intermittent and not very severe. He first noticed a swelling eighteen months ago, and this has slowly increased, gradually limiting the motions of the joint.

Physical Examination. Negative except as follows: There was evidence of an old process in the base of the right lung, demonstrable by physical signs and x-ray. There was a bony tumor occupying the upper four inches of the right ulna about the size of a large orange. This was hard, with soft areas, circumscribed and not tender. It mechanically limited the motions of the joints. There are no axillary glands. The Wassermann was negative. Blood picture not remarkable.

X-ray showed the upper four inches of the ulna distended to the size of an orange by a tumor. The outer walls were thin bone and the cavity was traversed by many fine bony trabeculae.

Operation. Resection of the upper third of the ulna was accomplished without much difficulty. The triceps tendon was sutured to the fascia of the forearm, and an orbicular ligament was made from fascia to prevent the head of the radius from dislocating forwards.

Convalescence uneventful.

Pathological Report. Giant cell sarcoma.

The giant cell central sarcoma is the least malignant type of bone sarcoma, practically never forming metastases. Some observers recognize two forms, one of which is benign, and the other forming metastases. If recurrence takes place it usually does so locally. Resection is the operation of choice and amputation should be performed only under exceptional circumstances.

At present, ten days after operation, it would appear that the elbow will be a fairly useful joint. It may be possible, however, at a later date to do a bone graft to fill in the defect caused by the removal of the ulna.

DUODENAL ULCER: PERFORATION: TREATMENT OF DUODENAL FISTULA.

DR. DANIEL F. JONES reported a case of perforated duodenal ulcer.

The patient, a man of 65, developed a duodenal fistula, after drainage of an abscess in the region of the head of the pancreas. In poor condition, and septic, before the fistula developed, he rapidly ran down hill, as all food taken by mouth came out the fistula. The walls of the wound, and the skin, were rapidly digested. At the end of ten days, the patient was almost moribund, with no pulse whatever, that could be felt at the wrist.

A Witzel jejunostomy was done under local anesthesia, in order to nourish the patient, and give him fluid. An hydraulic siphon was then connected up with a catheter, which lay in the wound. A bottle was interposed, between the wound and the siphon, to collect the digestive fluids. All dressings were removed, and the skin covered with zinc oxide ointment.

The patient remained almost pulseless for twenty-four hours, then gradually improved.

The wound leading to the duodenal fistula was kept absolutely dry, by the siphon, and as fast as the digestive fluids were collected in the bottle they were put into the jejunum, through the jejunostomy.

Within one week the fistula, which was a very large opening into the bowel, was closed, and the patient's condition was much improved. Five days later an attempt was made to feed the patient by mouth, but the symptoms of duodenal ulcer were so severe, including vomiting of coffee ground material, the feeding by mouth was stopped for two weeks, and the feeding by jejunum continued. At the end of this time, the patient took his nourishment without discomfort, or other symptoms, and has now entirely recovered.

Attention is called to jejunostomy in this condition, as being more sure and more satisfactory, than a gastro-enterostomy, which is frequently done in cases of injury to the duodenum. The siphon, as used in this wound, will prove of the greatest value, I am sure, in many fistulae, such as those which occasionally follow perforated ulcers, biliary fistulae, all small intestine fistulae, and even suprapubic cystostomies.

DR. HUGH WILLIAMS spoke of a similar case and a similar use of the siphon. He exhibited an electric double-suction pump designed by his chauffeur for the purpose.

DOUBLE EXOPHTHALMOS WITH OPTIC NEURITIS, A SMALL GOITRE AND SLIGHT SIGNS OF HYPERTHYROIDISM.

DR. LINCOLN DAVIS presented and discussed this case. The diagnosis lies between Graves' disease and a possible new growth in the sphenoidal region.

DR. GEORGE S. DERRY saw the case in consultation and reported that the patient, a female, 54 years old, noticed in October, 1914, some protrusion of her left eye. This gradually increased, and a fold of conjunctiva below the eyeball became edematous and projected forward between the closed lids.

Four weeks ago, the protrusion of the left eye appeared to subside, and the right eye then began to protrude a little, accompanied with swelling of the fold of conjunctiva.

The proptosis is now considerable, and about equal on both sides. Limitation of motion of the eyeballs downward and to the left; slight limitation upward.

Right eye now tends to diverge. Right cornea slightly hazy and epithelium wrinkled. Right optic nerve head shows some neuritis.

Left cornea and media normal. Very marked optic neuritis, with swelling of the disc and congestion of the veins. Several hemorrhages.

Pupils equal and react.

Vision right, 20/100.

Vision left, 20/70.

Patient has a palpable thyroid, slight tremor of the hands, and the pulse-rate has at times reached 160. At present it runs between 80 and 90. Blood pressure, 200. Wassermann negative.

Neurological examination, with reference to intracranial pressure, negative.

Numerous nasal examinations negative.

Various possible diagnoses: a new growth far back in the nose, exophthalmic goitre, disease of the posterior ethmoid cells or sphenoid sinuses. Thus far, it has not been possible to make a diagnosis.

Optic neuritis is extremely rare in Graves' disease.

Fields of vision have been taken, but throw no light on the condition.

Case is brought before you in hope of receiving suggestions as to diagnosis and treatment.

SEPARATION OF THE LOWER EPIPHYSIS OF THE FEMUR WITH DISLOCATION.

Dr. C. L. SCUDDER presented a boy, 9 years old, who, while stealing a ride, caught his foot in the spokes of a revolving wheel, sustaining an injury to the left leg, for which he was immediately brought to the accident room of the hospital.

Examination found a well developed and nourished boy in great pain. All findings were negative excepting for the left leg, which was displaced inward with inward rotation of the foot. There was considerable shortening and great tenderness. The lower end of the femur could be felt just beneath the skin at the outer side of the leg just above the knee. All motions of the leg caused extreme pain. The leg was held in median flexion. No extension was possible because of the great pain. There was no ecchymosis or break of the skin, and the swelling about the knee was considerable. The leg was placed in pillow and side splints.

The X-ray which was taken at entrance showed a separation of the lower epiphysis of the left femur with dislocation of the epiphysis forward under the patella.

Three days after the accident I operated upon this patient. Two lateral incisions were made 5 inches long. The displaced epiphysis was exposed through these incisions. Two strong Lambotte hooks were placed on the edge of the displaced epiphysis and by traction upon these hooks, by traction upon the leg, and by pressure over the lower end of the femur posteriorly, the separated epiphysis was replaced in its normal position. The two lateral incisions were closed by suture and the leg flexed firmly upon the thigh and held in this position by means of a plaster bandage.

The X-ray subsequently demonstrated that the epiphysis had been replaced. A report six weeks later finds that the boy is moving his knee through an arc of about 20 degrees, is having gentle traction made upon the leg, massage to the knee and active movements. He is gradually gaining the full use of the knee.

REMARKS.

It has been suggested by Binney and others that in certain cases of separation of the lower epiphysis of the femur it may be necessary to insert a steel pin through the epiphysis into the shaft in order to prevent a slipping of the epiphysis after reduction. In this case there was no tendency to slipping of the fragments upon the shaft, while the acutely flexed position of the knee was maintained. The only advantage that a pin might have been to this boy is that had it been used he might have been allowed earlier freedom in the movement of the leg, and so he would have gotten about a little bit sooner.

OPERATIVE PROCEDURES UPON THE KNEE-JOINT.

Dr. E. G. BRACKETT showed a series of cases illustrating the ease and success with which the cavity of the knee-joint can be explored or operated upon through a median incision of the patella. Both tendons should be exposed freely so that they may be well seen and that an exact median incision may be made in the patella. The upper end of the skin incision should slant slightly outward; the bone should be cut through cleanly, but the tendons should be only nicked. Do not displace very much the fascia and tendon on the patella.

The greatest possible care in asepsis should be exercised. The closure is entirely by silk. The joint is completely immobilized for not more than three days. Passive motion is instituted after the first week or ten days. Weight-bearing is allowed in from four to six weeks.

Book Reviews.

Essentials of Medical Electricity. By GEORGE KNAPP ABBOTT, A.B., M.D. Illustrated. Philadelphia and London: W. B. Saunders Company. 1915.

This manual for medical students and nurses aims to present the principles of electrotherapy in suitable form for elementary instruction and yet with sufficient scientific completeness to cover the fundamental facts of its clinical application. The subjects of galvanic, faradic, sinusoidal and static electricity are successively considered with chapters on electrolysis cathaphoresis, electrotonus, electrodiagnosis and high frequency currents. The work is illustrated with 87 text cuts illustrating apparatus and modes of application. The attempt to make the text easily comprehensible is, in a large measure, successful though the subject requires a knowledge of at least elementary physics for its satisfactory understanding. At the close of each chapter is a series of useful questions for review. It would seem that the book is much more likely to be of value in medical schools than in training schools for nurses.

Local and Regional Anesthesia. With Chapters on Spinal, Epidural, Paravertebral, and Parasacral Analgesia, and on Other Applications of Local and Regional Anesthesia to the Surgery of the Eye, Ear, Nose and Throat, and to Dental Practice. By CARROLL W. ALLEN, M.D., instructor in Clinical Surgery at the Tulane University of Louisiana, New Orleans; Lecturer and Instructor in Genito-Urinary and Rectal Diseases at the New Orleans Polyclinic; Visiting Surgeon to the Charity Hospital. With an Introduction by RUDOLPH MATAS, M.D., Professor of General and Clinical Surgery at the Tulane University of Louisiana, New Orleans, etc. Illustrated. Philadelphia and London: W. B. Saunders Company. 1914.

This is a well-printed book of 600 pages covering every portion of the field of local anesthesia. Under this head, as is apparent from the title, Dr. Allen includes chapters on spinal and sacral anesthesia.

This is the book of an enthusiast, who has much practical use of the methods he describes, and has covered the literature upon the subject in a most extraordinary manner. It is unfortunate, indeed, that his extensive bibliography is eliminated from the book, even for the excellent reason of avoiding undue bulk. The author has been successively a student, assistant and associate of that brilliant, untiring and original surgeon, Matas of New Orleans, who nearly two decades ago planned and actually began a book on this subject. It will be somewhat of a surprise to a good many young surgeons to discover that Matas was one of the greatest and earliest investigators of local anesthesia in this country. His name has usually been associated with entirely different branches of surgery. His introduction is interesting and contains a brief summary of the various and unusual procedures which he carried out in those early years. Dr. Allen most enthusiastically credits his teacher with not a few of the great advances made in the early days of local anesthesia.

The book is composed of twenty-three chapters, beginning with history; then follows consideration of nerves and their sensations; osmosis and diffusion; various anesthetics; their dangers; technic; indications; and a detailed description of the methods in use upon the various anatomical areas of the body. As already noted, spinal, epidural, paravertebral, parasacral anesthesia, and the anesthesia of the organs of special sense and the teeth, are included in the single volume. The author quotes freely from Braun, to whom he makes special acknowledgment. The book is marked by that thoroughness which it is customary at present to describe as German, and fortunately lacks the unnecessary prolixity of many German treatises.

It is superfluous to comment on the fact that the field of local anesthesia is limited at present only by infancy, and by the surgeon. There are few operations indeed which have not been successfully carried out under local anesthesia. It certainly does require perseverance and precise anatomical knowledge, but it is worthy of more general attention than has yet been paid to it in America. The book seems admirable and is unhesitatingly recommended.

The Gold-Headed Cane. BY WILLIAM MACMICHAEL, M.D. New York: Paul B. Hoeber. 1915.

This new American edition opportunely recalls to general professional familiarity a classic collection of medical essays written with the charm of a century ago and based on the story of the gold-headed cane carried successively by Drs. Radcliffe, Mead, Askew, Pitcairn and Bailey, whose biographies, as supposedly told by the cane, compose the substance of the book. The cane in question was deposited by the widow of its last possessor in the new college of physicians of London in 1825. Dr. Macmichael's felicitous exposition of its history was first published in 1827 and a second edition appeared the following year. In 1884 was published a third edition, in which the editor, Dr. William Munk, wrote a continuation of the narrative in excellent imitation of Macmichael's style, bringing the story down to the year 1871. This present fourth edition follows the text and illustrations of the second and represents the work as left in finished form by the author. In a charming preface, Dr. Francis R. Packard of Philadelphia sketches the life of Macmichael and the history of his work and of the cane. Sir William Osler in his introduction briefly comments on the lives of the cane's possessors and points out that this fourth edition is published as a memorial to Dr. Radcliffe on the two hundredth anniversary of his death. A wholesome interest in the history of medicine and of its famous men is being fostered in these days as a desirable counteracting agent to the excessive scientific tendencies of the time, and few works could form a more appropriate introduction to such a study than this story of the lives of five of the more eminent British practitioners of the seventeenth and eighteenth centuries.

Transactions of the American Climatological and Clinical Association. VOL. 30. Philadelphia. 1914.

This volume records the proceedings of the American Climatological Association at its thirty-first annual meeting in Atlantic City, N. J., in June, 1914. It includes the president's address by Dr. J. M. Anders of Philadelphia, and a series of 23 papers presented at the ses-

sions of the meeting. Among these may be noted those by Dr. Edward O. Otis on "Unsolved and Debatable Problems in Tuberculosis;" by Dr. Arthur K. Stone on "Subnormal Temperature in Tuberculosis;" by Dr. Cleveland Floyd on "The Interrelationship of Pleurisy and Empyema;" by Dr. Guy Hinsdale on "Atmospheric Air in Relation to Tuberculosis;" and by Dr. Nathaniel K. Wood on "Percussion of the Lungs." Many of the articles are well and abundantly illustrated by attractive, full-page plates.

Infection and Immunity. A Textbook of Immunology and Serology for Students and Practitioners. BY CHARLES E. SIMON, B.A., M.D., Professor of Clinical Pathology and Experimental Medicine, College of Physicians and Surgeons, Baltimore. Third edition, 8vo, 351 pp., illustrated. Philadelphia and New York. Lea & Febiger. 1915.

The reviewer has had occasion to express his appreciation of an earlier edition of this work. The author has achieved his purpose in presenting a lucid and easily readable exposition of the subject of "Immunology and Serology." Practical applications are given with sufficient detail and clearness and are satisfactorily illustrated. The work is without undue pretense and contains an adequate bibliography appended to each chapter. It is to be particularly recommended for students and beginners in laboratory methods.

Materia Medica and Therapeutics. BY LYNETTE A. PARKER, B.Sc., R.N., Instructor in Nursing and Health, Teachers' College, Columbia University, New York. Philadelphia and New York: Lea & Febiger. 1915.

This textbook for nurses aims to present the use of drugs from a scientific basis and an effort has been made to give only the important and practical points which form a foundation for the intelligent handling of drugs but not for their prescription. Detailed descriptions of the physical properties of the drugs have in many cases been omitted. After a series of initial chapters on weights and measures, solutions, pharmaceutical preparations, definitions, history, administration of medicines, toxicology, acids and alkalies, salts and the active principles of medicinal plants, the principal drugs of the pharmacopeia are considered in groups according to their action on various anatomic and physiologic systems and functions of the body. There are also chapters on prescriptions, on habit-forming drugs and on psychotherapy, hydrotherapy, electrotherapy, serotherapy and radiotherapy. A large amount of useful and available information is thus made accessible to

nurses within the relatively brief space of 300 pages. The work is well illustrated with 29 engravings and three attractive colored plates. It presents a rather dry subject in interesting and original form.

Bodily Changes in Pain, Hunger, Fear and Rage. BY WALTER B. CANNON, M.D., George Higginson Professor of Physiology in Harvard University. New York and London: D. Appleton & Co.

In this monograph the author presents an account of his recent researches into the function of emotional excitement, with especial regard to the four primitive human and animal experiences of fear, rage, pain and hunger. These investigations into the bodily changes occurring in conjunction with these emotions have been conducted during the past four years at the Harvard physiological laboratory and there has been discovered a group of remarkable alterations in the bodily economy associated with the emotions, which may reasonably be regarded as physiological adaptations and responses nicely adapted to the individual's welfare and preservation. The present volume recording these experiments and their interpretation may be regarded as the elaboration and outgrowth of the author's earlier period of researches on the motor activities and alimentary canal, which appeared in his important volume on "The Mechanical Factors of Digestion," in the series of International Medical Monographs, which was reviewed in the issue of the JOURNAL for April 11, 1912 (vol. clxvi, p. 564). The present work deals not merely with the effect of the emotions on digestion, but with the general organization of the visceral nerves concerned with the emotions, the relation of adrenal secretion and of carbohydrate metabolism to the emotions, the utility of the bodily changes produced by pain, the energizing influence of emotional excitement, the nature of hunger and the interrelation of the emotions. Of particular contemporary interest is the final chapter on alternative satisfactions for the fighting emotions, in which the author recognizes the fighting instinct as fundamental in mankind, and speculates on the possibility of the substitution for it, or rather, to employ the Freudian phrase, its sublimation into some form of the athletic instinct, which should afford a safe outlet for physical energy and gratification of the desire for conflict.

Each chapter closes with a brief bibliography on the subject which it considers and at the conclusion of the volume is a list of 20 published researches from the physiological laboratory in Harvard University on which the present account is based. Like its predecessor, this volume of Dr. Cannon's is to be regarded as deserving the highest praise as a valuable, original experimental contribution to the knowledge of the physiology of the emotions.

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THE RETIREMENT OF HEALTH COMMISSIONER GOLDWATER.

THE announcement that Dr. S. S. Goldwater is shortly to relinquish his position as head of the health department of New York has been received with profound regret, not only in that city, but wherever his admirable work in that capacity has become known and appreciated by those interested in sanitary science and the promotion of public health. When Dr. Goldwater accepted the commissionership it was with the understanding that the arrangement was to be temporary; and in response to urgent request, he has, in fact, remained in office for a considerably longer period than he originally anticipated. He is desirous to resume, in accordance with previous agreement, the post of superintendent of Mount Sinai Hospital, and the authorities of that institution are unwilling that this should be further delayed, especially

in view of the fact that the already very extensive buildings and work of the hospital are about to be materially enlarged, and in connection with this his services and advice are particularly required.

Under Dr. Goldwater's administration the progress made by the Department of Health has been remarkable, and many of the notable advances made have been referred to from time to time in the JOURNAL. Especially was comment made on the new sanitary code which, after the most elaborate preparation, both in the way of revision and providing many additional sections enlarging the department's field of operations, went into effect on January first.

Without further reference to what was accomplished in 1914, attention may be called to a report recently made by the commissioner to Mayor Mitchel, in which are recorded the many activities of the department in new directions during the present year. Among the noteworthy matters mentioned are the following: In addition to the new division of industrial hygiene another new division has been created, that of statistical research, and the effort will be made to utilize the work of this in such a way that other bureaus of the department will be guided in their own work by its findings. The department has advocated a higher standard of qualification for medical licensure, proposing that the present law should be so amended that, as is now the case in Pennsylvania and New Jersey, every graduate in medicine shall be required, before obtaining a license to practise, to have a training of not less than one year's duration in hospital or clinical work. In the meantime the department, having committed itself to such a standard, has requested the Municipal Civil Service Commission hereafter to admit no candidate to examination for appointment as medical inspector in the department who cannot show to his credit a year of clinical training. Post-graduate instruction in contagious diseases, including both clinical and bacteriological examinations, has been successfully organized at the Willard Parker Hospital. A special clinic of instruction has been established, under the auspices of the bureau of preventable diseases, to which all applicants for appointment to volunteer service in the tuberculosis clinics will hereafter be assigned for courses of instruction in physical diagnosis and for the study of branch-office and clinic routine. The division of efficiency and research has under way a careful

analytical study of the policies and especially the business methods of the bureau of laboratories. The Medical Societies of the Counties of New York and Kings, respectively, have been invited to coöperate with the department in the investigation of the work of the diagnostic laboratory, the efficiency of which is of such vital interest to the whole body of physicians in the city. A committee has been organized to formulate a plan for the establishment of a department training school for medical inspectors employed in the bureau of child hygiene. In collaboration with the Department of Education, there has been started, under the editorial management of the bureau of public health education, a publication entitled "School Health News," which is designed in part for the instruction of school teachers in matters of hygiene, and in part to stimulate coöperation between the school physicians and nurses on the one hand, and school principals and teachers on the other. The bureau of public health education has also undertaken, in coöperation with various neighborhood associations, the distribution of health leaflets in the form of "Neighborhood Chronicles," the first page of which gives the local news of a particular district, while other pages are devoted to general health notes. Special instructions have been issued to department employees to coöperate with the Tenement House Department in carrying out the law prohibiting the overcrowding of tenements. Recognizing the fact that office workers are being subjected more and more to conditions of employment which are injurious to health, the department has undertaken to investigate existing conditions, and, if necessary, will formulate a program for their amelioration. An investigation of a number of commercial laundries having shown that in the prevailing laundry methods neither the height of the temperature nor the duration of the application of the cleansing solution is sufficient to destroy completely all pathogenic organisms, the department has issued regulations for the control of laundries. A series of prosecutions has been begun for violation of the section of the sanitary code which prohibits the false labeling of medicinal preparations. This includes "any statement, design or device regarding the drug or its ingredients, or regarding its or their action on diseased conditions, which statement, design or device shall be false or misleading in any particular." The department has initiated a movement

for the prevention of street fatalities due to the operation of automobiles by incompetents. An educational lunch room has been opened in the department building. While the primary object is to provide a wholesome lunch for employees at cost price, an effort will be made to promote a knowledge of food and nutrition among the patrons of the lunch room and the public generally. As the abuse of alcohol constitutes an important public health question, a committee has been organized to outline a definite program of educational work among all classes against intemperance.

THE REALITY OF PSYCHOGENETIC AFFECTIONS: THE TRAUMATIC NEUROSES.

WE should not forget that when we say psychic factor or psychogenetic induction of disease, we really do not mean anything more than a physiological process, for as a matter of fact, in any psychic reaction an actual change takes place in the energy output of the body, and we only state it in psychologic terms for brevity and convenience. Pavlov, Cannon and Crile have shown very conclusively the physical concomitants of some of the psychic reactions. Clinical experience has shown that psychic stimuli may cause intense reactions in the difference of the heart beat, extra secretions of various organs and alterations of the metabolism. These are all physical results of psychologic stimuli; so, after all, we are only dealing with medical, physiological facts when we talk about psychological or psychogenetic reactions.

The traumatic neurosis is purely psychic and can be dealt with psychologically only. (*Journal Abnormal Psychology*, 1910, June.) Its pathogenesis is derived from a false notion of the patient, which induces depressing emotions that disturb both bodily health and life relations. A clear illustration of the mechanism is that of the "conditioning" of the gastric reflex of dogs by psychological stimuli, whether these are pleasurable or painful. The removal of the extraneous suggestion would remedy any "neurosis" but for the fact that memory maintains its action; so that the mental content must be modified at its foundation, and this requires considerable analysis of the patient's trends. Hence the complete failure of such naive procedures as re-

assurance and suggestion. (*New York Medical Journal*, January, 1915.) Law suits and malingerings, so often interwoven with these cases, have created misunderstandings. But indemnity is not necessarily curative even of the malingerer. A case which lasted seven years after receiving heavy damages is an instance in Washington. (*American Journal Medical Sciences*, December, 1914.)

In the complicated case, proper psychological reconstruction, made possible by clear analysis, inevitably cures, as the mechanism of neurotic disturbances after accidents differs in no way from that which we find when there has been no accident at all. Furthermore, its nature is not of a complexity beyond the understanding of a layman; so that its principles can readily be grasped when presented in court by an expert witness who really understands them. (*New Orleans Medical Journal*, May, 1915.)

The object of treatment is not merely to sidetrack an unpleasant thought or emotion, but to re-educate the patient's tendencies in a fruitful direction which will preclude reactions of a disquieting or hurtful kind. The process can be most satisfactorily accomplished only when the practitioner has analyzed the psychic factors which enter into the disturbance. He does this in order to have an understanding of the mental processes with which he will have to deal in reconstructing the patient's reactions to the surroundings which have initiated or are maintaining his psychosis. ("Hysteria and Its Modern Treatment," *J. A. M. A.*, December, 1912.)

The procedure may be very complex, but in principle it does not differ from the very simple conditioning, reconditioning and deconditioning of autonomic reflexes practiced by Pavlov upon dogs in his experiments upon the functions of the digestive glands.

The principle is one of associating with useful activities, which very often means social relationships, the pleasurable feelings for which the patient has substituted some distressing emotion. When this is accomplished there ensues the spontaneous disappearance of the disagreeable feelings which are at the root of the disorder, thanks to a power of storing up impressions in the human cortex in the form of ideas, the constant activation of which may thus interfere with proper social adaptation through their "association" into a painful complex. ("Occupation Cramp," etc., *J. of Neurol. u. Psych.*, 1912, Bd. 19, etc.)

MIXED INFECTION IN TUBERCULOSIS.

THE specific character of tubercular infection should not give the impression that the tubercle bacillus is the sole organism playing a part in or influencing the course of this disease. Just as tuberculosis may be accompanied by or complicated with other diseases, which add to the burden that the body must overcome, and which so unfavorably influence the course of the dominant disease, just so may there be and are there frequently associated with the tubercle bacillus other organisms, which, though they are not causative of distinct disease entities, add materially to the severity, rapidity and the character of the disease. In the rapid fulminant type of pulmonary tuberculosis, in the so-called galloping consumption, where there is such rapid loss of weight, large variations and remissions in temperature, drenching sweats—very much as in pyemic conditions,—with marked destruction of tissue, there is the simultaneous action of other and commonly pus-forming organisms. This is particularly understood in consolidation and cavity formation, which, while they may be caused entirely through the action of the tubercle bacillus, are more likely the eventualities following mixed infection with other organisms—for it is here that such organisms are so frequently found.

The tubercle bacillus itself is culturally intractable—is slow growing, difficult to grow, delicate and selective of the media in which it will grow—and when acting alone in the tissues behaves in like manner. It is not properly a pyogenic organism. The pus in the so-called cold abscesses in tubercular conditions is usually sterile—is not pus at all, but mixed debris from the disintegration of tissues in these conditions. And there is a positive danger in interfering with such infections for fear of converting these sterile tubercular abscesses into pyogenic abscesses, with serious effect to the patient.

In uncomplicated tubercular infection there is a tendency to subnormal temperature, and the afternoon rise of temperature is not a universal feature in pulmonary tuberculosis. The afebrile, sweatless and slowly progressing types of this disease are cases of pure infection. Except in the acute miliary form, tuberculosis is a local lesion and not a bacteremia or septicemia and, therefore, except in conjunction with a mixed infection, leucopenia is usually the rule. Leucocytosis is, however, a constant accompaniment of

cavity formation, so much so that the continued absence of leucocytosis is considered good evidence of the absence of cavity in cases where the physical signs seem to point, but uncertainly, to that condition. The leucocytosis in pulmonary tuberculosis is usually polymorphonuclear.

The organisms most frequently found in mixed tubercular infections are the *streptococcus pyogenes*, the *staphylococcus pyogenes aureus*, the *diplococcus pneumoniae*, the *pneumobacillus*, and allied capsulated organisms. While the tubercle bacillus will not flourish culturally in symbiosis with other organisms, it does seem that symbiosis within the body favors rapid destruction of tissue, cavity formations, variations in temperature, sweats, rapid loss of weight and the induction of leucocytosis. In this connection the examination of the sputum has an added value besides merely as diagnostic of the specific presence of the tubercle bacillus, in the determination of prognosis, since an infection solely with tubercle bacilli as evidenced on microscopic examination is of good prognostic significance.

In the treatment of tuberculosis the dust-free, dry climate, away from the centres of population, with their congestive conditions and foci of infections, is as much a factor in anticipating mixed infections in individuals whose vitality is already sufficiently low and peculiarly susceptible to all infections, as it is in merely creating conditions unfavorable for the growth of the tubercle bacillus.

THE DIFFERENTIATION OF BODY TYPES.

In another column of this issue of the JOURNAL we publish a communication calling attention to a paragraph in which Mr. Galsworthy has recently denoted the differentiation between the two body types which Dr. Goldthwait and Dr. Bryant in the columns of this JOURNAL have recently described as herbivorous and carnivorous. It is of interest in this connection also to call attention to an article by Dr. McEvoy on "Stomach Diseases from a Medical Standpoint," which appeared in the issue of the JOURNAL for November 3, 1910, in which the differentiation of body types and the clinical importance of this differentiation is pointed out. In 1914 also Dr.

McEvoy presented before the Norfolk District Medical Society a continuation and further elaboration of his method of distinguishing these body types, which he classes as broad, normal and narrow. As was pointed out in our editorial of June 17, this recognition of differing physical types in man is not a new observation, but the understanding of its meaning has been a relatively recent development. In this comprehension the work of Goldthwait and Bryant seems to have been of particularly illuminating value and this value is increased by the citation of the interesting parallel comment by Mr. Galsworthy who, as a layman, has noted the significance of the physical phenomena of body types and their differentiation.

THE USE OF IODINE IN SURGICAL FIRST AID.

ONE of the interesting advances in surgical first aid which has come into prominence in conjunction with the present European War has been the use of iodine for the immediate sterilization of wounds. For this purpose a solution of iodine is put up in $3\frac{1}{2}\%$ in glass ampoules, each containing about 2 c.c. and provided with a rubber bulb for expression of the contents. These ampoules can readily be carried by each soldier as part of his equipment, and the men are instructed how to break off the glass tip of the ampoule and inject the contents into the wound or spread it over the injured surface. Preliminary statistics from the European War hospitals indicate that wounds treated in this way with the immediate subsequent application of a sterile dressing show a much lower percentage of serious infection than wounds treated by sterile dressing without iodine. These first aid ampoules are equally applicable in times of peace to the manifold open traumata of civil and industrial life.

CHOLERA IN AUSTRIA.—Report from Zurich, Switzerland, on July 16, states that the Austrian ministry of the interior has officially announced that on July 12 there were in the Austro-Hungarian Empire 809 cases of Asiatic cholera, as against only 77 cases on July 8. The rapid increase of this disease has occurred chiefly among prisoners of war in Galicia.

A NEW MEDICAL SOCIETY.

IN another column of this issue of the JOURNAL we are glad to note the establishment in Boston of a new medical society, the "New England Society of Dermatology and Syphilis." The multiplication of medical societies leads sometimes to confusion and duplication of work, but in the present instance there seems a definite and important field for this latest organization. The clinical facilities for the study and advancement of dermatology and syphilis in the larger cities of New England are of a value and extent second only to those of the greatest metropolitan centers. It is felt that such a society as that just established will serve not only to co-ordinate the work of those already engaged in this field but to stimulate the interest of general practitioners in a due attention to this important special branch of medicine. In behalf of the profession the JOURNAL is glad to extend cordial greetings and good wishes to this latest medical society.

MEDICAL NOTES.

MEASLES ON THE DECREASE IN NEW YORK.—According to figures compiled by the Bureau of Records of the Department of Health, the outbreak of measles which has prevailed in New York City for the past few weeks has passed its height and is now declining. The decline is clearly reflected in the death-rate, 11.02 per one thousand of population, as compared with 11.24 for the corresponding week of 1914. This difference of .22 points in the weekly rate means an increase of 23 deaths. The death rate of the first 28 weeks of 1915 is lower than the same rate for the corresponding period of 1914, when it was 14.51. Measles and scarlet fever were the only epidemic diseases to show increase over the corresponding week of last year. The others all showed a gratifying decline. Organic heart disease showed an increase of 22 deaths, but when considered in conjunction with chronic Bright's disease, the increase amounted to but one death. There was an increase of 22 deaths from pulmonary tuberculosis last week, as compared to the corresponding week of last year. This increase is undoubtedly to be attributed to the changeable weather that prevailed, which hastened the end of those sufferers from this disease whose life was on the ebb.

INCREASE IN FOURTH OF JULY ACCIDENTS.—According to an investigation just completed by the Department of Health no fatal casualties attended the celebration of the 4th of July in New

York. There was, however, an alarming increase in the number of accidents that resulted from the misdirected enthusiasm of the younger celebrants. Inquiry at the larger hospitals of the city, particularly those having an ambulance and an out-door service, elicited the information that the number of 4th of July accidents showed an increase of more than 100% over similar accidents in 1914, and that most of the wounds had been caused by the use of blank cartridges. Post-mortem inquiry will not remedy that which has already happened, but the results of such inquiry should be used next year to re-stimulate public interest in, and support for, a safe and sane Fourth.

BEQUEST TO UNIVERSITY OF PENNSYLVANIA.—The will of the late Samuel Dickson of Philadelphia establishes a trust fund of \$100,000, one-half of the proceeds of which is to be devoted to the William Cutler Clinical Laboratory of Medicine.

AMALGAMATION OF TWO MEDICAL COLLEGES.—It is announced that the Hahnemann Medical College of San Francisco has offered to convey its property to the University of California and to cease giving separate instruction, on condition that two professorships, in homeopathic materia medica and therapeutics be maintained at the University of California Medical School. The instruction in these subjects is to be elective.

EUGENIC MARRIAGES IN WISCONSIN.—Report from Madison, Wis., on July 10, states that since the so-called eugenic marriage law went into effect in that state the total number of marriages has declined from 21,052 in 1913 to 17,245 in 1914.

THREE OUTBREAKS OF SMALLPOX.—The weekly report of the United States Public Health Service for July 2 notes that during the week ended June 12, 1915, five cases of virulent smallpox and two deaths were reported at Brownsville, Texas, and seven cases and two deaths at New Orleans, La. During the week ended June 26, two new cases of smallpox were reported at New Bedford, Mass., making a total of twenty cases, of which nine were fatal.

WOUNDS INFECTED BY PHOSPHORUS.—It is reported in the publications of the Société de Biologie by Victor Henri that wounds received from German shrapnel are often seriously infected by phosphorus. The balls of shrapnel are covered by a violet red powder composed of over ninety per cent. of phosphorus. When a soldier is hit by a bursting ball the powder is either carried directly into the wound or is ignited and oxides of phosphorus or white phosphorus enter the wounds, in which latter case death is likely to ensue shortly. The phosphorus coming in contact with the tissues disposes them to morti-

fication and provides abundant opportunity for thriving bacteria.

A PUBLICATION ON PREVENTION OF BLINDNESS.—The National Committee for the Prevention of Blindness has recently issued a pamphlet prepared by the Ohio Commission for the Blind called "Common Causes of Blindness in Children," in which are clearly set forth various common eye diseases and valuable advice and suggestions as to the proper protection of eyesight. The booklet is illustrated with striking pictures and its simply stated facts and rules are well calculated to impress themselves on those who, by their ignorance or carelessness, might be the cause of unnecessary blindness in themselves or in those dependent on them.

PREVALENCE OF MENINGITIS, MALARIA, PELLAGRA, POLIOMYELITIS, SMALLPOX AND TYPHOID.—The weekly report of the United States Public Health Service for July 2 notes that during the month of May, 1915, there were reported eighteen cases of cerebrospinal meningitis in Virginia, twelve in Ohio and five in Mississippi. During the same period there were reported in Mississippi 7092 cases of malaria, 2187 of pellagra and 254 of typhoid fever. In Virginia there were also eighteen cases of poliomyelitis, 108 cases of smallpox and 149 cases of typhoid. In Kansas there were 301 cases of smallpox and 36 of typhoid, in Ohio 305 of smallpox and 207 of typhoid, and in Indiana 487 of smallpox and 61 of typhoid.

TYPHOID FEVER IN THE UNITED STATES.—A recent bulletin of the United States Public Health Service calls timely attention to the discreditable fact that the proportion of the prevalence of typhoid fever in this country is from two to five times as great as the rate in leading European nations. During the past year there were approximately 400,000 cases of typhoid fever in the United States, with 30,000 deaths. The bulletin continues in part as follows:—

"In many American cities there has occurred within the last twenty years a considerable reduction of typhoid fever. Due in a large part to improved sanitary conditions in the cities, the typhoid rate for some entire states has shown a material decrease. For the country as a whole, according to the available figures, the rate has been reduced about 50% in the last forty years. But the present rate is about the same as that which prevailed in some of the other advanced nations of the world thirty years ago. In other words, the United States is a generation behind the times in respect to the reduction of its typhoid rate. In recent years a specific method for increasing individual resistance to typhoid germs has been employed. This is known as anti-typhoid inoculation or 'vaccination.' It is pointed out, however, that the protection given by anti-typhoid inoculation is relative, not abso-

lute, and that such inoculation is not to be regarded as a substitute for sanitation."

NEW YORK ASSOCIATION FOR IMPROVING THE CONDITION OF THE POOR.—The Department of Social Welfare of the New York Association for Improving the Condition of the Poor was given, in April, 1913, by Mrs. Elizabeth Milbank Anderson, a memorial fund to be used "in fostering preventive and constructive social measures as distinguished from relief measures." A recently published report records the various uses to which the fund was put. The Bureau of Welfare of School Children, in cooperation with the Health Department, took up the work of medical inspection of school children, dental clinics, and the sanitary survey of school buildings. It had been estimated that of the children examined, 69.7% were reported in need of treatment, and of that number 23.9% had received adequate attendance. In connection with the New York School Lunch Committee, it supplied approximately one and one-half million portions of food to school children, and has taken steps to maintain lunch rooms in high schools where lunches may be furnished the pupils at actual cost. In cooperation with the Bureau of Public Health Education of the Department of Health a Bureau of Food Supply has been established and a Food Supply Store, which is operated on strictly business principles, is on an entirely self-supporting basis. The Bureau of Public Health and Hygiene made a sanitary survey of the various public bathing pools in Manhattan, and a campaign to increase the attendance at the Milbank Memorial Bath resulted in an increase of 2896 bathers in one month over a similar period of the previous year.

Completely financed from Department of Social Welfare funds, the activities of the Ventilation Commission are under the direction of Professor C. E. A. Winslow, the permanent chairman. The commission is now completing the second year of its investigation by means of which it is attempting to determine, through the experimentation plant established at City College and the specially equipped public school in the Bronx, the real importance of the chemical theories of air vitiation, the effects of temperature and humidity upon physiological reactions, working conditions, appetite, etc. A similar series of measurements is being conducted regarding the effect of dry, cold and recirculated air, of various methods of air distribution in a room, types of window ventilation, etc. As a result of this investigation it is expected that adequate and reliable standards of proper ventilation will be determined upon, and practical, yet scientific, methods of ventilation for schoolroom, workshop and home recommended.

EUROPEAN WAR NOTES.—There is increasing evidence of the shortage of medical men in

Great Britain, not so much in the army as at home, where the remaining practitioners are greatly overworked attending to the patients of their colleagues at the front. In Germany, on the other hand, there appears to be no such shortage since the recent increase in the number of medical men in that country is considerably higher. In 1886 there were 26,452 physicians in Great Britain and only 16,292 in Germany, whereas in 1910 the number of physicians in Germany had increased 100% and that in Great Britain only 33%.

In its issue of July 3 the *Lancet* chronicles, as follows, the arrival in London of the surgical unit from the University of Chicago:—

"There arrived in England from the United States last week a complete unit known as the Chicago unit, whose services have been accepted by the War Office as the full medical and nursing establishment for a general hospital of 1040 beds. The unit consists of 32 medical men and the nursing staff of 75, including the matron. The medical staff includes, besides physicians and surgeons, specialists in eye, nose, throat and ear, and oral surgery, a radiographer, and a pathologist. The medical men of this unit have been carefully selected out of several hundreds of applicants, the senior officers being all men of established position, while the nurses are all fully trained and have served in large general hospitals in the United States. The junior members of the Chicago unit were temporarily distributed among various general military hospitals in London on the day of their arrival, pending the departure of the unit to its allotted sphere of action. It is planned to keep the hospital corps intact for at least six months, its subsequent permanency being assured by the large waiting list of American medical men and nurses ready to fill up the places of those who may then wish to retire. All members of the unit have been inoculated, in addition to the customary smallpox and typhoid vaccination, with the new Plötz vaccine against typhus fever, supplied from the Mount Sinai Hospital, New York."

The Victoria Cross has recently been awarded for distinguished gallantry to Dr. Francis Alexander Caron Scrimger, surgeon-captain of the 14th Battalion, Royal Montreal Regiment, Canadian Army medical service. In the headquarters' report recommending Dr. Scrimger for this honor, his conduct was described as follows:—

"On the afternoon of April 25, 1915, in the neighborhood of Ypres, when in charge of an advanced dressing station in some farm buildings, which were being heavily shelled by the enemy, he directed under heavy fire the removal of the wounded, and he himself carried a severely wounded officer out of a stable in search of a place of greater safety. When he was unable alone to carry this officer further, he remained with him under fire till help could be obtained. During the very heavy fighting between April

22 and 25, Captain Scrimger displayed continuously day and night the greatest devotion to his duty among the wounded at the front."

On July 17 the total of the principal New England relief funds for the European War reached the following amounts:—

Belgian Fund	\$265,114.25
Red Cross Fund	136,998.60
Jewish Fund	65,225.86
Polish Fund	48,728.01
British Imperial Fund	31,201.17

The principal state contributions to St. George's Fund are as follows:—

Massachusetts, \$10,517.69; Pennsylvania, \$4,830.41; New Jersey, \$4,032; Connecticut, \$3,800; New York, \$3,173.57; Illinois, \$3,139.89; Pacific Coast, \$2,148.92; Michigan, \$1,865.75; Ohio \$1,373.32; Rhode Island, \$1,200.45.
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BOSTON AND NEW ENGLAND.

NEW ENGLAND SOCIETY OF DERMATOLOGY AND SYPHILIS.—On May 6, 1915, at a meeting of physicians from various New England cities, held at the Massachusetts General Hospital, there was formed the New England Society of Dermatology and Syphilis. The following officers were elected: Dr. Abner Post, president; Dr. Townsend W. Thorndike, vice-president; Dr. Charles J. White, secretary. Boston was chosen as the meeting place of the society. It is proposed to hold four meetings a year between the months of October and May at some hospital, and to make the clinical exhibition and demonstration of cases a prominent feature of each meeting. The success of the clinical session has already been assured by the heads of the departments for dermatology and syphilis in several hospitals who have promised the use of the combined material of their several clinics. The declared object of the society is to promote the interests of dermatology and syphilography in New England. The meeting recognized the fact that, while the number of specialists has steadily grown larger, the general medical public has also given many signs of increasing interest in these subjects. It was felt, therefore, that the society would best fulfil its purpose by including both classes in its membership, and, accordingly, has opened its membership to all reputable physicians practising in New England.

On these foundations the society asks the support and coöperation of the profession at large. Applications for membership may be sent to Dr. Charles J. White, 259 Marlborough Street, Boston.

THE BOSTON FLOATING HOSPITAL.—In the *JOURNAL* of July 8 mention was made of the staff of the Boston Floating Hospital for this season. The name of Dr. Elmer W. Barron is now added as visiting physician in the day patients' department of the hospital.

The trustees desire all persons interested in the institution to have opportunity to inspect the hospital and see how its work is conducted.

The boat returns daily (including Sundays) at 4.30 in the afternoon, to North End Park Pier, Commercial Street, where visitors are welcome until 7 p.m.

BACKWARD CHILDREN IN BOSTON SCHOOLS.—In September there will be opened in Boston, under the direction of Miss Ada M. Fitts, a school for backward children, with an enrollment of about 750 pupils. Examination of these pupils, made by the medical department of the schools, showed that in very few instances was mental deficiency the cause of the backwardness, but often lack of sufficient food, and in many cases insufficient sleep and defective teeth were contributing causes in keeping pupils below normal. It is expected that by regulating habits of living to hygienic principles and with proper instruction, the majority of pupils will later be enabled to enter their regular classes.

BOSTON INSTRUCTIVE DISTRICT NURSING ASSOCIATION.—The report of the Boston Instructive District Nursing Association for June, 1915, states that during that month 10,777 visits were made by nurses. There were 928 new cases. One patient, during the past five years, has received 990 visits and is now dead.

MILK AND BABY HYGIENE ASSOCIATION.—The semi-annual report of the Milk and Baby Hygiene Association shows a steadily growing increase in the number of babies, both sick and well, that the Association has under its supervision. The number cared for during the first six months of this year was 3007, an increase of 18% over the first half of 1914. The attendance at 233 "well baby clinics" was 11,398, an increase of 47% over 1914. Nurses made 23,965 home visits and four extra nurses are doing summer work. Contributions to the work of the association may be sent to F. Abbot Goodhue, treasurer, 26 Bennet Street, Boston.

The following named persons were elected members of the medical advisory committee of the association: Richard M. Smith, M.D., chairman; Henry I. Bowditch, M.D., Walter B. Cannon, M.D., Charles Hunter Dunn, M.D., Arthur A. Howard, M.D., Maynard Ladd, M.D., Ralph C. Larrabee, M.D., John Lovett Morse, M.D., Milton J. Rosenau, M.D., Fritz B. Talbot, M.D., and Charles W. Townsend, M.D.

HOSPITAL BEQUESTS.—The will of the late Mr. Frederick S. Pearson of Great Barrington, Mass., who died at the sinking of the *Lusitania* in May, was filed on July 12 for probate at Pittsfield, Mass. It contains bequests of \$50,000 each to the Lowell (Mass.) General Hospital and to the House of Mercy Hospital in Pittsfield, Mass.

PREVENTION OF RABIES IN BOSTON.—In last week's issue of the JOURNAL we noted the prevalence of rabies in several towns of this Commonwealth and the local measures undertaken for its

suppression. On July 12 the Boston City Council passed an order requiring that all dogs within the city limits be muzzled or kept under restraint for the next ninety days.

COMPLICATION IN DENTAL REGISTRATION.—In the issue of the JOURNAL for April 15 we commented editorially on the dental registration bill then pending before the Massachusetts General Court; and in the issue of June 10 we noted its final passage and its approval by the Governor. The new law went into effect on May 31, and as a result there has arisen a peculiarly complicated situation.

The act created a new board, to be known as the Board of Dental Examiners and provided that it should consist of the then members of the old Board of Registration in Dentistry.

The old board began on May 24 a series of examinations which were not completed until June 1. The examinations were conducted under the old law and did not include a demonstration in prosthetic dentistry, as is required by the new law.

This examination was taken by 201 candidates, of whom 115 passed. The question now arises, however, whether even the successful candidates can legally be registered as dentists in this Commonwealth, since their examination did not include the new requirement provided in the bill. Being in doubt as to their rights to issue certificates under these circumstances, the members of the Board referred the matter to the attorney-general for his opinion and decision. The following is the communication as submitted to him:—

"The Board of Dental Examiners of this Commonwealth respectfully request your opinion on section 7, chapter 301, General Acts (an act relative to the practice of dentistry).

"The June meeting of said board for the examination of candidates having been advertised in March and April to be held on June 1, 2 and 3, 1915, under Chapter 137 of the Acts of 1887, and amendments thereto, did not include demonstrations in prosthetic dentistry, as provided for in the law approved by the Governor May 31, 1915.

"The Board of Dental Examiners desires to know if a certificate of fitness to practice dentistry can be issued to those who passed successfully the examination. What rights, if any, have those who failed in their examination?"

In reply to these queries the attorney-general rendered the following decision:—

"In my opinion your first question must be answered in the negative, since the right of the board to issue certificates under the provisions of the act is based upon the prerequisite that candidates have been examined in the manner prescribed by the statute.

"As to your second inquiry, I am of the opinion that those who failed in the examination which was taking place at the time of the passage of the act have no rights as against the

Commonwealth, other than to have the opportunity of being examined upon the subjects required by the provisions of the statute. If they are now examined in relation to their knowledge and capacity in prosthetic dentistry, and the board, taking into consideration their capacity in relation to this subject, should be still of the opinion that they are not qualified to practice dentistry in this Commonwealth, I am of opinion that they can have no complaint."

CASES OF INFECTIOUS DISEASES reported to the Boston Board of Health for the week ending July 13, 1915. Diphtheria, 58, of which 12 were non-residents; scarlatina, 39, of which 7 were non-residents; measles, 97; tuberculosis, 65, of which 1 was non-resident. The death rate of the reported deaths for the week was 13.27.

Obituary

FREDERICK HOWARD MARSH, M.A.,
M.C., Sc.D. (CANTAB.), F.R.C.S. (ENG.)

DR. FREDERICK HOWARD MARSH of Cambridge, England, who died on June 24 at Downing Lodge, was born at Homersfield, Suffolk, in 1839. He entered the medical school of St. Bartholomew's Hospital, London, in 1858, and in 1861 qualified as a member of the Royal College of Surgeons of England, of which he became a Fellow in 1866. During the decade following his medical studies at St. Bartholomew's he served as demonstrator of anatomy in the medical school and held other minor appointments. Finally in 1873 he became assistant surgeon to St. Bartholomew's Hospital and shortly thereafter surgeon to the Children's Hospital on Great Ormond Street. In these positions Dr. Marsh served during the busy years of his early professional life. In 1892 he became full surgeon at St. Bartholomew's and in 1904 retired as consulting surgeon to that institution and to the Ormond Street Hospital. Throughout this period he was also lecturer in anatomy and in surgery at the medical school. He early acquired a reputation as a consulting surgeon, especially in diseases of the joints, and this reputation was soundly built upon his profound knowledge as an anatomist and pathologist. In 1895, as a result of his extensive clinical experience he published his book on "Diseases of the Joints and Spine," which has become a standard work on orthopedics. He also edited the clinical essays and lectures of Sir James Paget, his predecessor at St. Bartholomew's and likewise a native of Suffolk. He was a frequent contributor to the *Lancet* and to other medical publications. In 1902 Dr. Marsh delivered the Bradshaw Lecture before the Royal College of Surgeons on "Infective Arthritis."

In 1903, just prior to his retirement from active hospital work, Dr. Marsh was appointed regius professor of surgery at the University of Cambridge, a position which had been in abeyance since the death of Sir George Murray Humphrey. In this new position he manifested the same zeal and enthusiasm that he had shown as a teacher in London and he was enabled to continue his clinical interest at Addenbrooke's Hospital in Cambridge. His popularity was evidenced by his election in 1907 to the mastership of Downing College. These two Cambridge offices he continued to hold at the time of his death. He continued also prominent and successful as a consultant in both Cambridge and London, and in recent years had served as honorary colonel in the East Anglian division of the territorial force of the Royal Army Medical Corps. As a teacher he was breezy, unconventional, genial, courteous and good natured and had a remarkable facility for simple and clear exposition.

Professor Marsh was vice-president of the Royal College of Surgeons of England in 1898, an honorary Fellow of the Royal Academy of Medicine in Ireland, a corresponding member of the Orthopedic Society of New York and a member and former president of the Clinical Society of London. He is survived by his widow, one daughter and one son.

Miscellany.

A JUDICIAL OPINION ON CHIROPRACTIC.

IN the issue of the JOURNAL for June 10 we commented editorially on a recent legal decision in the case of the New England College of Chiropractic, Inc., and cited a portion of the judge's opinion. The brief for the Commonwealth in this case argued that the statutes are constitutional and that the jury were warranted in finding that the defendant practiced medicine. Upon this basis it was contended that the exceptions taken by the defendant from the superior court should be over-ruled. The complete text of the judge's opinion upon this case is as follows and presents several points of especial interest to members of the regular profession.

"The defendant has been found guilty of violation of Revised Laws, Chap. 76, Sect. 8, in that he practised medicine without being lawfully authorized. He defends on the ground that he is a chiropractor and that his acts do not constitute a violation of the statutes. The evidence tended to show that he kept an office in Boston, indicated by a sign on which was his name, followed by the word chiropractor; that he practised for pay; that he said that the basis of

chiropractic is the adjustment of the vertebrae of the spine; that the vertebrae when not in their normal positions press upon the nerves of the spine; that the malposition of these vertebrae was the cause of abnormality and that an adjustment of these vertebrae to their normal positions would remove the pressure at the spine; that he said that he did not cure, that he simply adjusted. He testified that "chiropractic is the specific science that removes pressure upon the nerves by adjustment of spinal vertebrae; there are no instruments used, it is done by the hand only." The treatment pursued by the defendant was to have those who resorted to him go into an inner room and remove their outer garments until they were stripped to the waist. The patient then took a sitting position. The defendant examined down the spine, beginning at the top, by feeling with his fingers to see whether each vertebra was in its proper position. The method to discover whether a vertebra was out of position was by making a gliding move of the three middle fingers of the right hand, which constituted the process of "palpation," whereby one vertebra was compared with another. As a result of this "analysis" the defendant was able to tell whether vertebrae were out of alignment or out of their normal position.

In making "adjustments" the patient was placed on a low table with face downward, and the vertebra which was out of condition was given a quick thrust or push by the hands of the defendant. The acts performed by the defendant constitute, first, an examination of the vertebrae of the spinal column and a determination whether they are in a normal position; and, second, a manipulation of such of the vertebrae as are found to be out of position, so that they will become regular and correct with reference to each other. Although the defendant did not prescribe medicine, and testified that he paid no attention to the patient's description of symptoms of disease, yet it is obvious that his purpose was to treat the human body in order to make natural that which he found abnormal in the narrow field of his examination. The removal of pressure upon nerves is a means of relieving the ills flowing from that source. "Chiropractic" is defined as "A system of healing that treats disease by manipulation of the spinal column." (Webster's International Dict.) The plaintiff's manipulation was of a most important part of the body and related to a nerve center. It might have been found that it could have no other aim than a prevention of disease or relief from existing disarrangement of body functions. That which the defendant did and its manifest purpose might have been found to be practising medicine within the meaning of the statute. Medicine relates to the prevention, cure and alleviation of disease, the repair of injury, or treatment of abnormal or unusual states of the body and their restoration to a healthful condition. It includes a broad field. It is not con-

fined to the administering of medicinal substances or the use of surgical or other instruments. It comprehends "a knowledge not only of the functions of the various organs of the human body, but also the diseases to which these organs are subject, and the laws of health, and the modes of living which tend to avert or overcome disease, as well as the specific methods of treatment that are most effective in promoting cures." (Knowlton, C. J., in *Commonwealth v. Jewelle*, 199 Mass. 558, 560.) In order to practise medicine one need not cover the entire field of the science. If he devotes himself to a very restricted part of it he still may be found to practise medicine. It is matter of common knowledge that there has been great specialization in that profession in recent years. To that effect are the decisions: *Commonwealth v. Parn*, 196 Mass. 326. *People v. Gordon*, 194 Ill. 453. *Witly v. State*, 173 Ind. 404. *People v. Allcutt*, 117, App. Div. 546, affirmed in 189 N. Y. 517.

It is of no consequence that the defendant abstained from the use of the words diagnosis, treatment, or disease, in description of what he did, and employed the terms "analysis," "palpation," and "adjustment." The acts which he did and their manifest design are to be examined rather than the words used, in order to ascertain the true nature of the defendant's conduct. A physical examination of the vertebrae, a decision whether they are in normal position or not, and strong manual pressure upon them with the end of changing the position with reference to each other of those found to be irregular, and thereby relieving pressure upon nerves, may be found to have such relation to the cure or prevention of disease or the relief of pain as to constitute the practice of medicine. Numerous decisions upon kindred facts point in the same direction: *State v. Corwin*, 151 Iowa, 20. *Green v. Hodges*, 91 Kan., 658, *State v. Smith*, 233 Mo. 242. *Swarts v. Siverney*, 35 R. I., 1. *State v. Grenier*, 63 Wash. 46.

The judge stated to the jury, without objection or exception, that "the defendant did not claim that he came within any of the exceptions of Sect. 9 of Chap. 76, of the Revised Laws." Hence it is not open to the defendant now to contend that his practice rightly may be described as "cosmopathic method of healing," the final exception in Sect. 9. Even if this point had been saved, there is nothing in it. "Cosmopathic" is defined in the Standard Dictionary as "open to the access of super-normal knowledge or emotion supposedly from a preternatural world." Without undertaking to decide what a "cosmopathic method of healing" may be, plainly it does not include the defendant's operations.

The statute as thus construed is constitutional. That was decided in *Commonwealth v. Parn*, 196 Mass. 326, and affirmed in *Commonwealth v. Jewelle*, 199 Mass. 558. A somewhat similar statute was upheld in *Hewitt v. Chariar*, 16 Pick. 353. To the same effect in principle are

Dent v. West Virginia, 129 U. S. 114, and Collins v. Texas, 223 U. S. 288, and cases there cited. See also State v. Johnson, 84 Kan. 411. The protection of the public from those who undertake to treat or manipulate the human body without that degree of education, training and skill which the legislature has prescribed as necessary to the general safety of the people is within the police power of the state. This general purpose may be effectuated by requiring even of those who propose to confine their practice to a narrow specialty a much broader knowledge of the subject, provided such qualification is regarded by the legislature as necessary for the practice of any branch of medicine. The statute does not impair in any constitutional sense the liberty of the defendant. The protection of the public health is an object of such vital importance to the welfare of the state that any rational means to that end must be upheld. The defendant is placed in no worse position than others. The circumstances that Revised Laws, Chap. 76, Sect. 9, to an extent (see Com. v. Delon, 219 Mass. 217), exempts certain classes, such as osteopaths and pharmacists, and those practicing Christian Science, mind cure, massage and others, does not render the statute unreasonable as to the defendant nor deny to him the equal protection of the laws. Rational classification is within the power of the legislature. Its determination in this regard cannot be overthrown upon the facts disclosed on this record. Every constitutional aspect of the statute is so fully covered by the decisions above cited that further discussion would be superfluous.

Exceptions overruled.

THE PREVENTION OF INDUSTRIAL DISEASES.

The Massachusetts State Board of Labor and Industries has recently sent to every practicing physician in this Commonwealth the following circular letter calling attention to the regulation relative to industrial diseases:—

Boston, June 19, 1915.

Dear Doctor:

Your attention is respectfully called to the following regulation relative to industrial diseases in Massachusetts:—

Under authority of Section 6 of Chapter 813 of the Acts of 1913 the Joint State Board of Labor and Industries and Industrial Accident Board hereby requires that every physician treating a patient whom he believes to be suffering from poisoning from lead, brass, phosphorus, arsenic or mercury or their compounds, or wood alcohol, or from anthrax, or from compressed air illness, report within 48 hours to the State

Board of Labor and Industries, the information relating thereto called for by the reporting blanks issued by the said Board. Every such physician is hereby requested to make reports on the said blanks to the State Board of Labor and Industries of any patient whom he treats that is suffering from any other ailment or disease which the physician believes to have been contracted as a result of the nature, circumstances or conditions of the patient's employment. (Adopted Jan. 23, 1914.)

The Board believes that the first essential in the campaign against occupational diseases in this state is to secure definite data as to the number and the location of these diseases. The great, unnecessary wastage of human life and health occurring each year because of conditions directly or indirectly associated with occupational life is familiar to every physician. He sees daily in the consulting room, in the home and in the hospital, person after person whose working efficiency has been lessened or destroyed by accident or by unhygienic surroundings associated with many lines of employment. Nevertheless, when we try to analyze the various occupational diseases or ailments caused by or associated with specific employments by reason of the nature, circumstances or conditions of that employment, few or no reliable data upon which to build a conclusion are available. Without such a basis, little or no progress can be made in combating even the more prevalent of the occupational diseases. The medical profession alone can furnish the necessary facts for the basis of this most important branch of preventive medicine.

The State Board of Labor and Industries invites your cooperation and assistance in a study of the prevalence of occupational diseases in Massachusetts. To that end you are requested to fill out the enclosed data blank and return the same to this office at your earliest convenience.

All data and information furnished by you are to be considered *confidential* and if used publicly by this department will be free from any mark of identification.

Relying on your aid and cooperation in this most important survey, I have the honor to be,

Very truly yours,

THOMAS F. HARRINGTON, M.D.,

Medical Deputy Commissioner.

With the above communication was sent also a copy of the following circular letter which had been previously issued to the public press concerning the organization of an industrial hygiene corps.

Boston, June 15, 1915.

The State Board of Labor and Industries has inaugurated a state-wide organization of wage-earners into an industrial hygiene corps for the

purpose of giving to persons injured or taken ill upon the premises in the various lines of industry, intelligent first aid attention and at the same time establishing a system of medical reports from the various industries of the state. This undertaking is undoubtedly one of the most comprehensive and far-reaching organizations for bettering the health and reducing illnesses among wage-earners ever undertaken in any state in the country.

There are in Massachusetts more than 600,000 wage-earners in the various industries. Accidents and illnesses in one degree or another are occurring continually in shops, factories and industrial establishments. Much of the seriousness of these cases depends upon the kind of attention given to the person at the time of the accident or at the onset of an illness. Very often life itself depends upon the cool, intelligent action of a fellow worker present at the time. It is not always practical to have a doctor or a nurse on the premises,—although very many of the industries of the state are now maintaining such professional supervision over their employees,—nevertheless it is possible and feasible to have in each establishment and in every department of the establishment one or more persons sufficiently instructed and trained to render safe first aid care until the arrival of the physician, or, in the case of sudden illness, to prevent a delay in sending for medical assistance whenever a doctor is necessary.

There are innumerable occasions of simple accidents and illnesses which can be cared for at the time by persons who have been specially instructed. Too often these simple conditions are neglected or improperly treated, and, as a result, serious illness, incapacity and loss of wages result. It is said that more than 4% of the population of Massachusetts is on the sick list all the time from illnesses which are preventable.

The persons appointed as hygiene assistants, instructors or supervisors will be adequately instructed not only to render suitable temporary surgical and medical aid, but likewise instructed in the early signs and symptoms of the common affections and illnesses. These various assistants will also be in the best possible position to give to the medical department of the State Board of Labor and Industries a regular report on the illness or accidents occurring in various lines of industrial life and the consequent loss of time resulting from such illness. These data are not available anywhere today and are most essential in the fight against occupational diseases and accidents now being undertaken by the State Board of Labor and Industries. The persons selected to act as industrial hygiene assistants will be graded according to the conditions existing in the various mercantile and industrial establishments. The number and rank of the persons so selected will depend upon the number and kind of wage-earners being protected. At the head of each division, however, there will be a physician or other specially trained person or

chief to whom the assistants will be responsible. These chiefs will be in close touch with the Medical Deputy Commissioner of Labor, Dr. Thomas F. Harrington.

The Legislature has given to the State Board of Labor and Industries the authority to require all industrial concerns to keep and maintain free of expense to the employees a medical and surgical chest, containing plasters, bandages, absorbent cotton, gauze and all other necessary medicines, instruments and appliances for the treatment of persons injured or taken ill upon the premises. Also to require that suitable accommodations shall be provided for the treatment of persons injured or taken ill upon the premises. Many places of employment are now equipped with such a medicine chest, and in many establishments a physician, nurse, social worker, foreman or forewoman has been placed in charge of the supervision of the health of the employees.

In addition to this corps of health supervisors, the Medical Department of the State Militia is instructing a large number of its officers and privates each year on problems of personal hygiene, exercise, rest, sanitation, etc. These men are chiefly employed in the manufacturing and mercantile establishments. Adjutant-General Cole and Surgeon-General Frank P. Williams of the State Militia have both endorsed this plan of health supervision and have promised their coöperation in fitting the lectures and demonstrations given in the Militia to conditions likely to be met in the various industries of the state. In many localities the surgeons of the Militia, in addition to the physicians associated with the many industrial and mercantile establishments, will be requested to act as chiefs of the various divisions of industrial hygiene assistants. Lectures and demonstrations of a practical nature will be given by these various medical authorities upon the various dangers of industrial life as well as upon the prevention of occupational diseases. All the instruction will be of such a practical nature that it can be carried out not only in the shops, factories and industries of the state, but also in the homes of the wage-earners. Mr. Edwin Mulready, Commissioner of Labor and Industries, believes that this will give to Massachusetts an organization for bettering the health conditions among its people far in excess of that possessed by any other state in the country.

These two communications represent the inauguration of an important attempt to further the cause of preventive medicine among the industrial classes of this state and it is earnestly to be hoped that members of the profession, by filling in and forwarding the blank report form accompanying the former letter, may evidence their intelligent appreciation of the significance of this movement and their willing desire to coöperate in making it successful and thereby contributing to the benefit which it may be expected to produce in the welfare of the community.

Correspondence.

PARIS LETTER.

THE FRENCH SOLDIER OF 1915.

(From Our Special Correspondent.)

PARIS, June 19, 1915.

Mr. Editor: At an ambulance that I visited the other day a soldier was brought into the operating room in a fearful state; his left foot had been shot off above the joint, he had a nasty wound of the abdomen, fortunately non-penetrating, and a piece of shell had entered at the top of one shoulder-blade, damaging the spinal column and passing out at an almost symmetrical point on the other. He was very pale from loss of blood and shock, and was painfully affected by the sight of the operating-room with its white-robed attendants and unaccustomed appliances; it is strange how little importance the French attach to details of this kind, as it would have been a perfectly simple matter to anesthetize this man outside in the ante-chamber. The surgeon said to him, speaking through his face-mask: "We are going to give you a little chloroform, *mon ami*, and put that wound on your shoulder in better order." The man seemed to grow paler still, and trembled somewhat; but, summoning what courage he had left after his manifold ordeals, he tried to smile, replied simply: "*Si vous voulez, Monsieur*," and lay back on the table. His condition proved serious, a piece of shell, fragments of bone, and shreds of uniform were extracted from the wound, and his fate now rests in the hands of the gods. If the suppuration from this vast, jagged loss of substance gets into the spinal column, I suppose this gallant son of France will have to go; but if he escapes this danger his chances are good, as the vitality and recuperative power of these men apparently knows no limit. It would seem as though ten months of campaigning in the open had, after sifting out the physically unfit, so tuned up the constitution of the others that they have become as hardy as fox-terriers, animals whose phagocytosis is equal to any terrestrial emergency.

From the one, know them all; this is the French soldier of today. The morale of these men is such that their leaders can ask any sacrifice from them; and when they fall in the effort, not a murmur escapes their lips. The will-power that enabled that man to summon a smile to his face and utter a formula of politeness as he faced what must certainly to him, and particularly in his grave condition, have seemed a frightful ordeal, however matter-of-fact it may have appeared to the operating-room staff, has drawn comment from everyone that has been brought into contact with the French wounded in the ambulances. A young American lady who helps at a base-ambulance in the Voges told me that she had had to feed with a tube on a passing sanitary-train a young soldier who had been shot in the mouth and was suffering terribly from having to be transported with a shattered jaw. She probably did this with unusual tenderness and skill, for the man was so grateful that he felt called on to make a special effort to express his appreciation; so he summoned up what little he knew of English and uttered a sadly-indistinct "thank you." One of the surgeons on duty at a Paris terminus, where the sorting and distributing of the arriving wounded is carried out, also told me that he went up to a soldier whose condition did not look very brilliant, he having in fact a very bad shell-wound of the right shoulder-joint, and said to him: "*Et bien, mon ami, comment vous trouvez-vous?*" But all the whining he obtained from that war-victim was: "*Ah, Monsieur, — ce que nous les avons eus!*" (What a doing we gave them.) That fellow was fresh from Notre Dame de Lorette!

The total absence of complaint, the unfailing courtesy, the consideration for each other, and the stoicism with which they accept their lot when hopelessly maimed, although young and with a long life before them of utter ruin,—for when the glamour of the war has worn off, and we all know how quickly that takes place, how unfortunate will not be the situation of these men?—are features that strike the observer with fresh force each time he comes in contact with a different agglomeration of these poor victims. As a surgeon said to me the other day while going along the beds of a ward of forty *grands blessés*, not one of them, even a man that was to pass away that same night, showing signs of discouragement or rebellion against Fate: "With men in that frame of mind, anything is possible." Just one little instance. A shell lit in a French trench, blowing the men and the defenses every which-way; finally one *trouper* came to his senses, picked himself up, and shouting "*débout, les morts!*" ("Up with you, you dead beggars?") set to work to rouse others, dig out those buried under *débbris*, and place the slightly wounded in such positions that they could be of help, until he had enough combatants to organize a semblance of defence that enabled him to hold the trench until other troops could get to their rescue.

In fact,—it is a remark made by everyone today that no one seems to know where the present Frenchman came from! The men of my generation, who remember the war of 1870, will also remember the Frenchman of that time; and those who were well-acquainted with the state of affairs here only a year ago, culminating in the disgraceful exhibition of the Caillaux trial on the very eve of this fearful struggle, will also remember that they would not have given a very high purchase-figure for the French moral character at that moment. What, then, has occurred to conjure up the splendid type of manhood that can be seen in any bed in any French ambulance at the present time? Simply this, the alternative of their life or death as a nation. They saw in a moment that *this* time it meant their very existence,—not provinces, or indemnities. At a grave crisis in the history of England one of her celebrated statesmen made use in the House of Commons of words to this effect: "The Angel of Death is abroad in the land"; and, after a long pause, in the solemn stillness he added, "we almost seem to hear the beating of her wings." The same thing occurred in France last August,—the French heard (plainly this time) the beating of the wings of the Angel of Destruction, and in a moment they were changed men; all their frivolity, scandal-mongering, political bickering and general invertebrate condition of *je m'en fiche-isme*, vanished into thin air, and in their place emerged the men who have done what the French have done this winter. In the fiery crucible of this the greatest peril of their existence as a nation the dull and unattractive ore has flowed forth as pure and shining metal; nor has the transformation been confined to the men alone, for the women are doing their part equally nobly. In one of the ambulances I visit there is a lady of means who cannot be much this side of sixty, and who for twelve or more hours a day is on her feet moving about incessantly superintending the rooms in which the soldiers' wounds are dressed, lending a helping hand in a thousand different ways. How many young ladies are there who, without previous training, could go straight to such arduous duties as that from the listlessness of social life?

Of the many peoples that are engaged in this Armageddon several have gained undying fame: Serbia did well, and would have done better had she not been stricken to the ground by a pandemic. Belgium did well,—uncommonly well; about this there is no doubt possible. But still,—after making every reserve in favor of these two countries, and admitting that for a small and peace-loving people like the Belgians to stand up against, and bear alone the brunt of, the first onslaught of the greatest military power ever

known, courage and moral fortitude of the very highest order were required,—I think that history will ultimately agree that the greatest surprise in the present struggle has been this wonderful change in the character of the French people, and the unsuspected virtues that have been brought into evidence among them during this terrible emergency.

"S."

P.S.—I am happy to be able to report that two weeks later the patient mentioned at the beginning of this letter was doing as well as could possibly be expected.

OXFORD AND CAMBRIDGE IN WAR TIME.

(From Our Special Correspondent.)

OXFORD COLLEGE,
OXFORD, ENGLAND, June 24, 1915.

Mr. Editor: No places in England show the effects of the war more than the two university towns, Oxford and Cambridge. Both have become training camps as they were in the times of the wars with France. Khaki is to be seen everywhere. One hears bugles from the meadows in the evening and in the morning is awakened by the tramp of marching feet and a song rising from hundreds of throats.

The enrollment of each university has been reduced to less than one-third the usual number. The students seen going about are for the most part Americans and Indians.

Most of the colleges in both universities have turned over a number of rooms to be used as officers' quarters, while in the college gardens one may often see ladies serving tea to the convalescent Tommies.

The First Division Base Hospital in Cambridge is one of the largest and most efficient in England, accommodating about 1200 wounded. It has been built completely since the war began and is composed of long one-story huts whose walls are made of some heavy paper-like preparation. The colonel in charge requested me not to publish a description of the hospital, so I must refrain from further details.

At Oxford the "examination schools," where at this time last year the university was conducting examinations, now has nearly four hundred wounded. It is called the base hospital. Across the street the Masonic Temple holds about sixty soldiers, while behind the temple an entrance leads into the beautiful gardens of New College. Here several pavilion tents have been pitched and one can see the nurses in their blue uniforms moving in and out among the beds. In the same way the Town Hall has been filled with beds.

At Easter time Major Whitelock was given Sommersville, a girls' college, and told to turn it into a hospital. The girls were moved out of their beautiful home and placed in one of the colleges of the university, Oriel. Sommersville is now a well organized hospital. More serious cases are placed in the larger wards in the ladies' former dining hall and assembly rooms. For others, three beds are placed in each large bedroom. Dressing tables serve excellently to hold flowers and medicines. The rooms are bright and cheery. Even the gassed patients express themselves as pleased with their surroundings. With a staff of four assisting physicians Major Whitelock is now attending to four hundred cases there.

I overheard the following conversation at Sommersville this morning. It was between a young sailor home on leave and a wounded army sergeant. "Ow are you been getting on in the navy?" "Oh it's a beastly bore waiting around for something to happen at sea. But 'ow are you?" For a little while the soldier did not respond, then he said, "Hi 'ave a couple of 'oles in my arm but that's coming on fine. Hi it's the bloody gas that bothers me. Hi don't feel as though Hi'd ever be fit again." The sailor replied, "This submarining is nothing to the bloom'n' gas!"

Sincerely yours,

WILDER G. PENFIELD.

THE DIFFERENTIATION OF BODY TYPES.

SEATTLE, WASH., July 6, 1915.

Mr. Editor: Two recent observations in regard to the herbivorous and carnivorous types of man present an interesting parallel.

In your editorial in the issue of March 4, 1915, appears this paragraph, "Probably the carnivorous type is really the superior, though it encounters peculiar perils in maintaining that superiority, and as a matter of fact it appears, certainly in the majority of American communities, that the carnivorous type predominates. This is evidenced by the rapid evolution, in the second and third generations, of carnivorous types out of immigrants of herbivorous type from European countries."

In an article entitled "Diagnosis of the Englishman" by John Galsworthy in the *North American Review* for May, 1915, is this statement: "Racially the Englishman is so complex and so odd a blend that no one can say what he is. In character he is just as complex. Physically there are two main types: one inclining to length of limb, narrowness of face and head (you will see nowhere such long and narrow heads as in our islands), and bony jaws; the other approximating more to the ordinary 'John Bull'. The first type is gaining on the second."

Very truly yours,

FRED J. FASSETT, M.D.

THE BELGIAN PHYSICIANS' RELIEF FUND.

REPORT OF THE TREASURER OF THE COMMITTEE OF AMERICAN PHYSICIANS FOR THE AID OF THE BELGIAN PROFESSION FOR THE WEEK ENDING JULY 10, 1915.

CONTRIBUTIONS.

S. E. B., Pittsburg, Pa.	\$ 50.00
Dr. George B. Broad, Syracuse, N. Y.	10.00
Dr. Winfred Wilson, Memphis, Texas.	11.50
Delta County Med. Society, Escanaba, Mich.	10.00

Receipts for the week ending July 10	\$ 81.50
Previously reported receipts	7544.34

Total receipts	\$7625.84
Previously reported disbursements:	
1625 standard boxes of food @ \$2.20	\$3575.00
1274 standard boxes of food @ \$2.30	2930.20
353 standard boxes of food @ \$2.25	804.84

Total disbursements	\$7310.04
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Balance	\$315.80
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F. F. SIMPSON, M.D., Treasurer,
7048 Jenkins Arcade Bldg.,
Pittsburg, Pa.

APPOINTMENT.

Dr. W. F. R. Phillips of the University of Alabama has been appointed professor of anatomy at the Medical College of South Carolina.

RECENT DEATH.

DR. JAMES A. BENNETT, who died recently in New York City, was born at Sterling, N. Y. He received the degree of M.D. from the New York Homeopathic College in 1871, but after practising his profession for a short time, relinquishes it for an active and successful business career. He was the senior living member of the American Institute of Homeopathy and a member of the New York County Homeopathic Society. He is survived by his widow, two daughters and two sons.